ROYAL AIR FORCE CONCLUDES ITS LARGEST EXERCISE IN A DECADE

The largest military exercise to be run by the Royal Air Force in the UK for many years has finished after three weeks of complex air activities.

The Exercise, called Ex Crimson Warrior involved personnel and aircraft from the RAF as well as the Royal Navy, British Army, United States Marine Corps and United States Air Force, and saw fast jets, multi-engine aircraft, helicopters and Unmanned Air Systems operating from Stations across the country.

Exercise Crimson Warrior was a development of the regular Cobra Warrior exercises with the addition of missions to support the work up of F-35B Lightnings and helicopters that will form the Carrier Strike Group Air Wing during next year's operational deployment of HMS Queen Elizabeth.

Incorporating large scale tactical training, the exercise began on the 19 October and involved over 70 aircraft completing a range of missions. The Exercise also marked the end of the long and demanding Qualified Weapons Instructor (QWI) Courses, which train selected personnel to be expert practitioners in their individual warfare speciality or aircraft.

The Typhoon is known as a swing role aircraft; this means pilots must be ready to switch from the air to air role to the air to ground role during a mission. As future tactics instructors the QWIC students have been tested in both roles in the same mission, with pilots engaging hostile aircraft as they approached their target area; then defending against enemy surface-to-air missiles as they located and attacked the land targets.

The Exercise Director, Group Captain Rob Barrett, said "Ex Crimson Warrior is the UK's premier live airborne tactical training event of the year and the directing staff from the Air & Space Warfare Centre's 92 Squadron have taken great pride in delivering this extremely demanding and complex exercise. All the participants have gained valuable experience in the integration of Air and Space power roles. The QWI students who have met the exacting standards required during Ex Crimson Warrior have proved themselves in the most challenging of environments and are now qualified to join the ranks of the UK Services' most able tactical leaders and instructors." ■

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TRANSFER LIST

Written by Alan Firbank.

EURO DECALS FROM FANTASY PRINTSHOP

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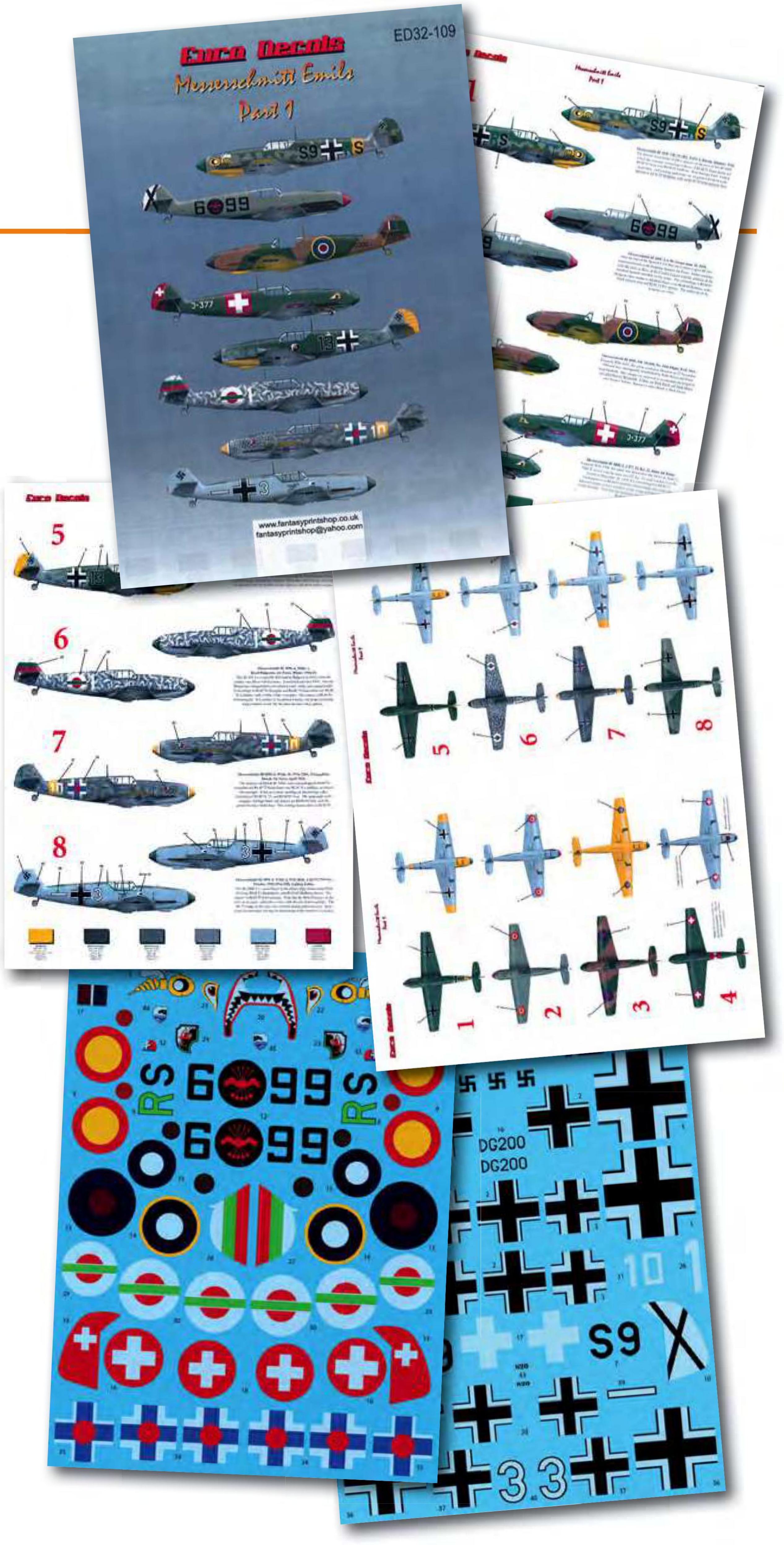


This month we present readers with another great decal sheet set from Fantasy Printshop released under their Euro Decals banner. Last month we had decals for Bf 109 Gs, and this month we are presented with eight sets of markings for the earlier Bf 109 E with some great schemes as listed below on two A4 sized sheets.

These will be a real treat for builders of 1:32 early Bf 109s. Each scheme is illustrated with four-sided camouflage diagrams and copy describing each aircraft.

As usual, the decals are produced to the highest standard, glossy decals on a blue backing sheet.

Details as follows:

MESSERSCHMITT EMILS – PART 1 (SHEET NO. ED-32109)

1. Bf 109E-7/B, S9+RS with 8./ZG-1 in Russia in the Summer of 1942. This scheme with the unit's wasp insignia is well-know. The scheme is a pattern of RLM 71 and RLM 02 over RLM 65 undersides. There is a Yellow RLM 04 band around the rear fuselage and lower engine cowling.

2. Bf 109E-3, 6-99 with the Spanish Air Force in 1939. National markings are a mixture of those left from Condor Legion operations and standard Spanish roundels. The upper surfaces were painted RLM 63 with RLM 65 undersides.

3. Bf 109E-3/B, DG200 with No. 1426 Flight, RAF 1941. This 109 was returned to flight after crash landing at Manston in Kent in November 1940. It was test flown, without a canopy, by Harvey Heyworth who was too tall to enable the canopy to close over his head. The colours are a pattern of RAF Dark Earth and Dark Green over Trainer Yellow undersides.

4. Bf 109E-3, J-377 with the Swiss Air Force in April 1940 where it served until the end of 1949. The colours were overall Dark Green RLM 71 on the upper surfaces and Hellblau RLM 65 undersides.

5. Messerschmitt Bf 109E-4, Black 13 with 8./JG 1 in 1941. A camouflage pattern of Dark Greens RLM 70 and 71 on the upper surfaces with a heavy mottle was carried with RLM 65 undersides. The rudder and lower engine cowlings were painted Yellow RLM 04.

6. Messerschmitt Bf 109E-4, White 1 with the Royal Bulgarian Air Force during the winter of 1944-45. Its old German scheme of RLM 74/75/76 was heavily over-sprayed with winter White and Bulgarian markings added.

7. Messerschmitt Bf 109E-4, White 10 with No. 13 Squadron of the Slovak Air Force in April 1943. The camouflage scheme was RLM 74/75/76 with a heavy mottle on the fuselage sides. The Slovak insignia was basically the German crosses with Dark Blue rather than Black and a Red dot in the centre and no swastika on the tail fin.

8. Messerschmitt Bf 109E-3, White 3 with 4./JG77 in Norway in October 1940. The camouflage pattern on the upper surfaces was Grey RLM 02 and Dark Green RLM 71 with RLM 65 undersides, extending to much of the fuselage and tail fin.

Thanks to Fantasy Printshop for their latest Euro Decal sheets for review. See their web site for details: fantasyprintshop.co.uk or phone 01208 77772.

IN PRINT

SAMPLES FOR REVIEW

Please send all items for review to the following address: Model Airplane International, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire, LU6 1QX, United Kingdom. Companies in the European Union should also add our VAT number, which is GB 789 7020 84

Valiant Wings Publishing Ltd

The Messerschmitt Me 410 Hornisse (inc. Me 210 & Me 310) – Airframe Album No. 16

www.dacoproducts.com

- By by Richard A. Franks
- ISBN: 978-1-912932-13-9
- Guide Price £19.95
- 160pp softback, 297 x 210mm

This month we have another addition to the growing list of Airframe Album titles from this publisher. For those not familiar with the series, they are concise profiles on individual aircraft types. The list of titles includes types where information can be sparse, thinly spread and difficult to locate in printed form. The subject of this Hornisse (Hornet) profile is a good example.

The first chapter of this book covers the story of the Hornisse 210, 310 and then the Me 410. The interesting copy describes the origins of the three versions and is illustrated with several photos. One shows the only Me 310 which was a converted 210 with the proposed modifications to make the Me 310 series. The 310 was to have More powerful engines, an increased wingspan, four-bladed propellers and a pressurised cabin for high altitude operations. We do not have to read very far to learn that the Hornisse series was not exactly a run-away success. Me 210 entered service and quickly became the victims of allied fighters and suffered many accidents because of its difficult handling characteristics. Pilots that had experience of the Bf 110 were able to manage the Me 210 but novice pilots found it very unforgiving and several suffered landing accidents.

The Me 410 began production in November 1942. The remaining 210s were withdrawn from frontline service and those 210s part built were changed to the Me 410 configuration with more powerful engines and an extended fuselage length. Even this improved Hornisse was beset with a long list of issues and was never a success in service. Gunners in American bombers found the Me 410 easy to shoot down. During one raid in 1944 American gunners accounted for eight of the defending 410s. By the end of 1944 Me 410s would be withdrawn from frontline service. The old adage regarding aircraft, “That if it looks right, it will be right” did not apply to this aircraft. This chapter concludes with mentions of the few Hornisse airframes that were flown and evaluated by the allies at the end of the war.

The next chapter is a Technical Description of the Hornisse and extends to over 60 pages. All aspects of the aircraft are covered in this section using photos of the two existing complete aircraft and hundreds of photos and diagrams from the archives. Anyone taking on a kit build of these aircraft will be able to see all of the fine detail should super-detailing be required.

The Evolution chapter extends to more pages than we usually see because of the vast number of versions and proposed versions of this aircraft series. Each page is covered with illustrations showing the changes from one version to the next. Again, good for those who look to modify their kit to make something different. The next short 8-page chapter looks at some of the proposed Me 410 versions that would be used for other roles such as torpedo bombers.

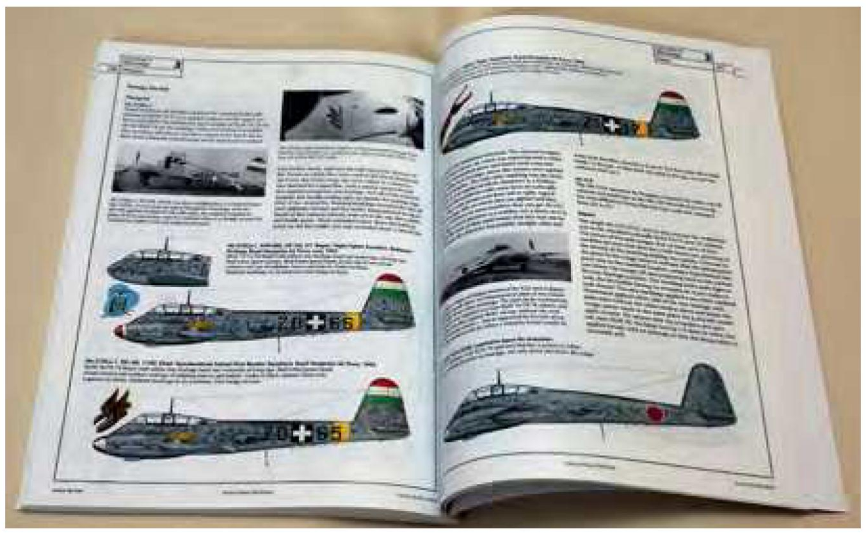
The next major section covers Camouflage and Markings with many of Richard J Caruana’s excellent colour profiles showing Hornisse schemes. The vast majority were painted RLM 74/75/76 with the mottle variations, common on Luftwaffe aircraft using these colours. Interesting copy and photos help describe schemes used by various units. Hungary used this aircraft and one was evaluated by Japan. Their schemes are shown too. The final pages of the Camouflage & Markings chapter shows some of the schemes seen on captured aircraft used for evaluation by the allies.

The final chapter is one of Steve A Evans’ kit build reviews. In most of the other books in this series we find several examples in different scales given in depth build reviews but, no doubt from space constraints, there is just a single build. The recent Meng 1:48 Me 410B-2/U4 is given a 6-page evaluation with text and progress photos illustrating the project.

The final pages consist of the usual appendixes, showing lists of Hornisse kits, accessories, decals and reading material.

Thanks once again to Valiant Wings for sending their latest title for review. In more normal times, this excellent book would have been launched at Scale ModelWorld 2020 on the Valiant Wings stand. See their web site: valiant-wings.co.uk for placing orders and information on their other titles. You will also find this book on the stands of specialist book traders at your local model shows when they start again. Highly recommended to modellers and those interested in aviation history. ■

Alan Firbank



TRANSFER LIST

Written by Alan Firbank.

EURO DECALS FROM FANTASY PRINTSHOP

www.fantasyprintshop.co.uk

This month we present readers with four more decal sheets from Fantasy Printshop released under their Euro Decals banner. The first ones is a new release that will please those many Phantom enthusiasts featuring F-4s with the 57th FIS and comes in 1:72 and 1:48. The other two are for 1:32 Tornados, a sheet of stencilling and a set of Tornado schemes showing some lovely special anniversary GR.4s. These two are not brand-new releases but as the new big Italeri GR.4 kit is recently on sale, we thought them worth an honourable mention. Check the Fantasy Printshop's web site for other Tornado sheets that we have reviewed in the recent past.

As usual, the decals are produced to the highest standard, glossy decals on a blue backing sheet.

MCDONNELL DOUGLAS F-4C & F-4E PHANTOMS OF THE 57TH FIS (SHEET NO. ED-72124)

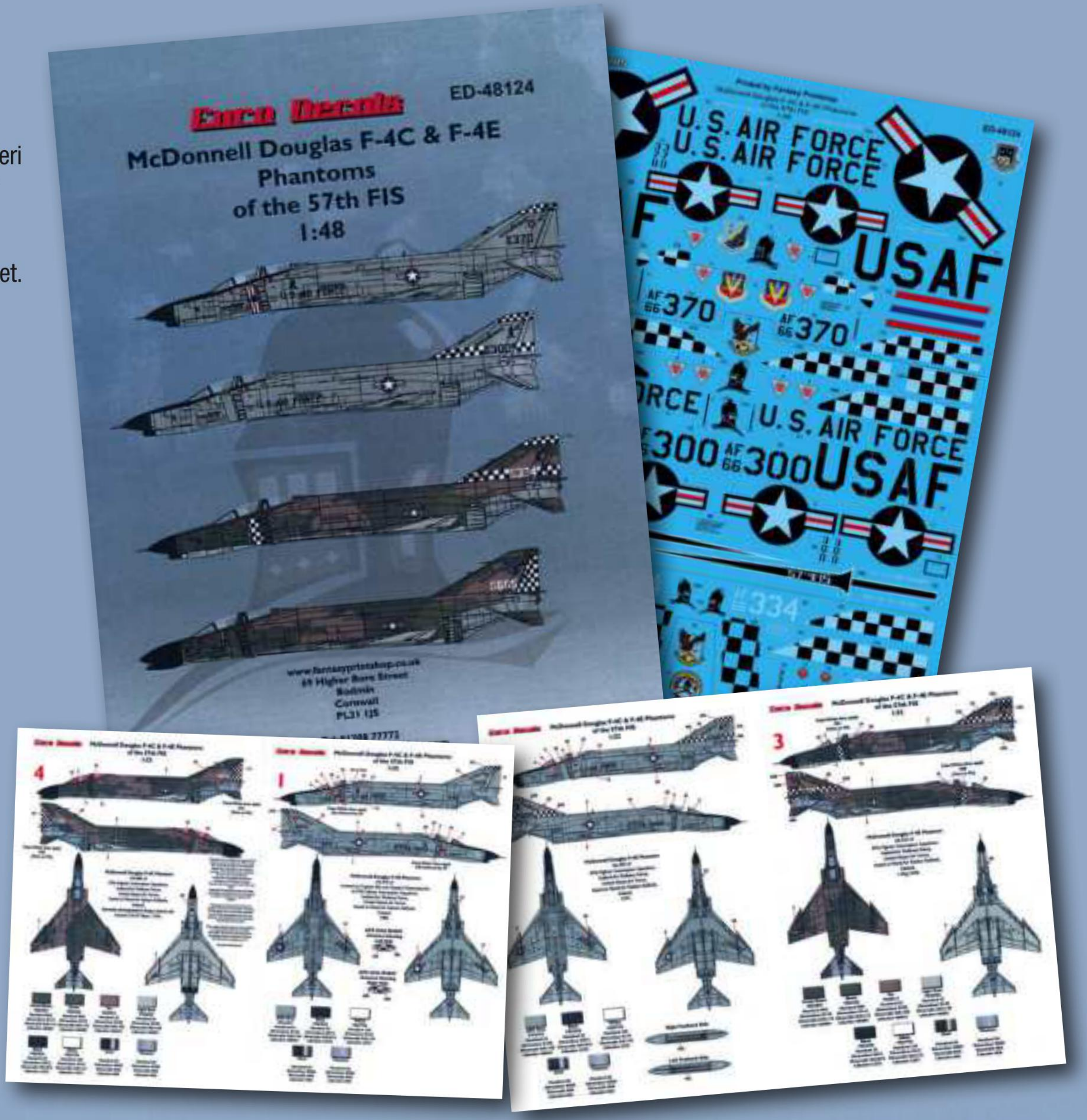
Those readers attending the International Air Tattoo in the mid-1970s and early 1980s will maybe remember the Phantoms that came to the show from Iceland with their distinctive black and white checker markings. The same unit has been illustrated in several Phantom kit box artworks over the years.

01: F-4E Phantom II AF66-370 with the 57th FIS at Keflavik in Iceland in 1985. The scheme is overall Air Defence Command Grey FS16473. The fin top sports the black and white checker pattern and red, white and blue bands were applied to the intake splitter plates. This aircraft attended IAT Fairford in 1985.

02: F-4E Phantom II AF66-300 with the 57th FIS at Keflavik in 1977. The scheme was overall ADC Grey FS16473 with two sets of black and white checkers on the tail fin.

03: F-4E Phantom II AF66-334 with the 57th FIS at Keflavik in 1978. The ADC Grey has been replaced with the USAF SE Asia camouflage of Forest Green FS34079, Green FS34102 and Tan FS30219 on the upper surfaces and Light Grey FS36622 undersides. The unit's black and white checkers appear on the tail fin and intake splitter plates.

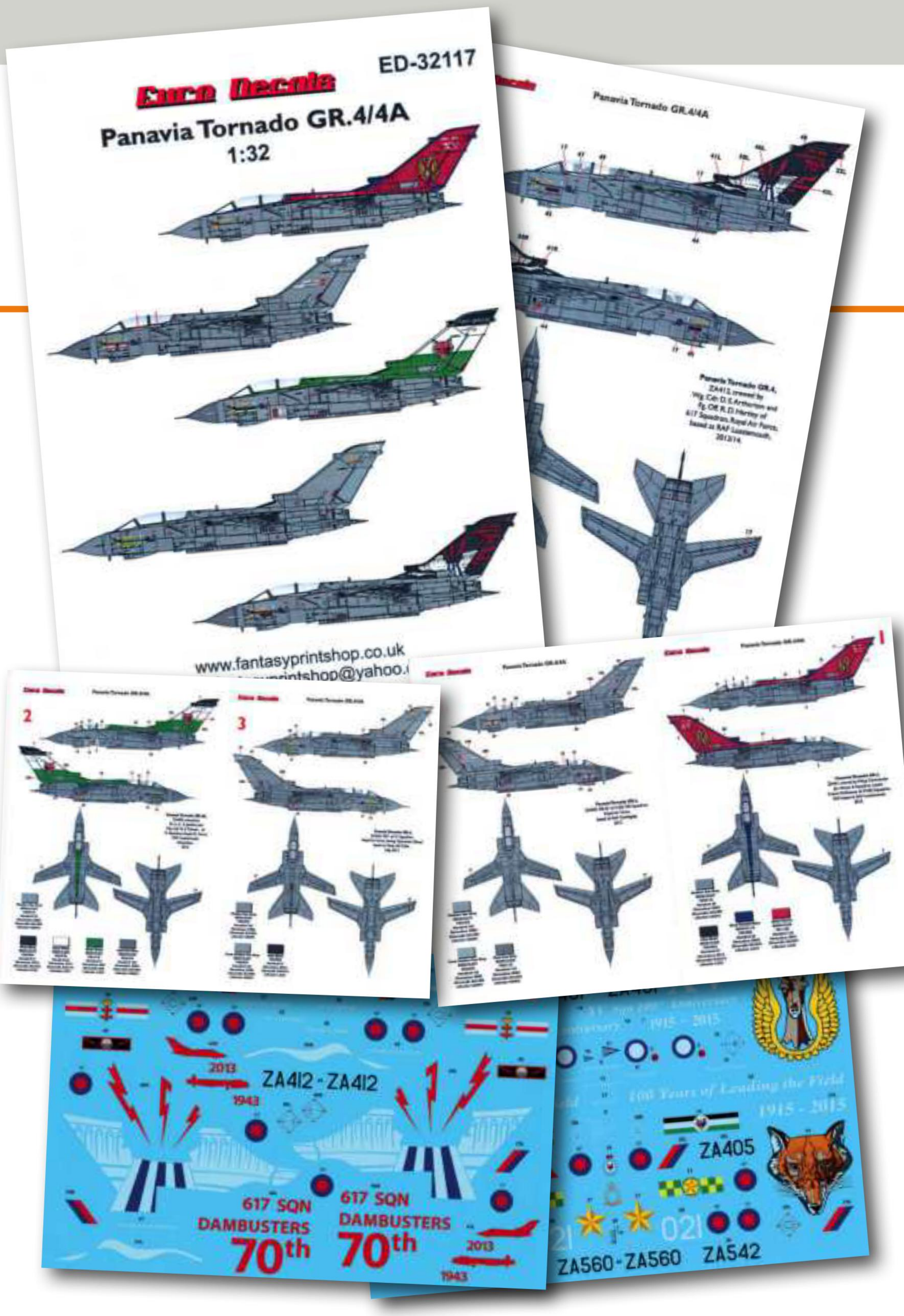
04: F-4C Phantom II AF64-685 with the 57th FIS at Keflavik in 1974. The same SE Asia camouflage scheme applies as above with the rudder covered with a black and white checkerboard pattern.



MCDONNELL DOUGLAS F-4C & F-4E PHANTOMS OF THE 57TH FIS (SHEET NO. ED-48124)

The sheet of the above 1:72 markings is enlarged to approximately A5 to fit 1:48 kits.

617 SQN
DAMBUSTERS
70th
2013
1943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ZA412 - ZA412
617 SQN
DAMBUSTERS
70th
2013
1943
ZA405
ZA560 - ZA560
ZA542
100 Years of Leading the Field
1915 - 2015

PANAVIA TORNADO GR.4/4A (SHEET NO. ED-32117)

This set of five Tornado markings includes four carrying anniversary markings and one in a fairly standard squadron scheme.

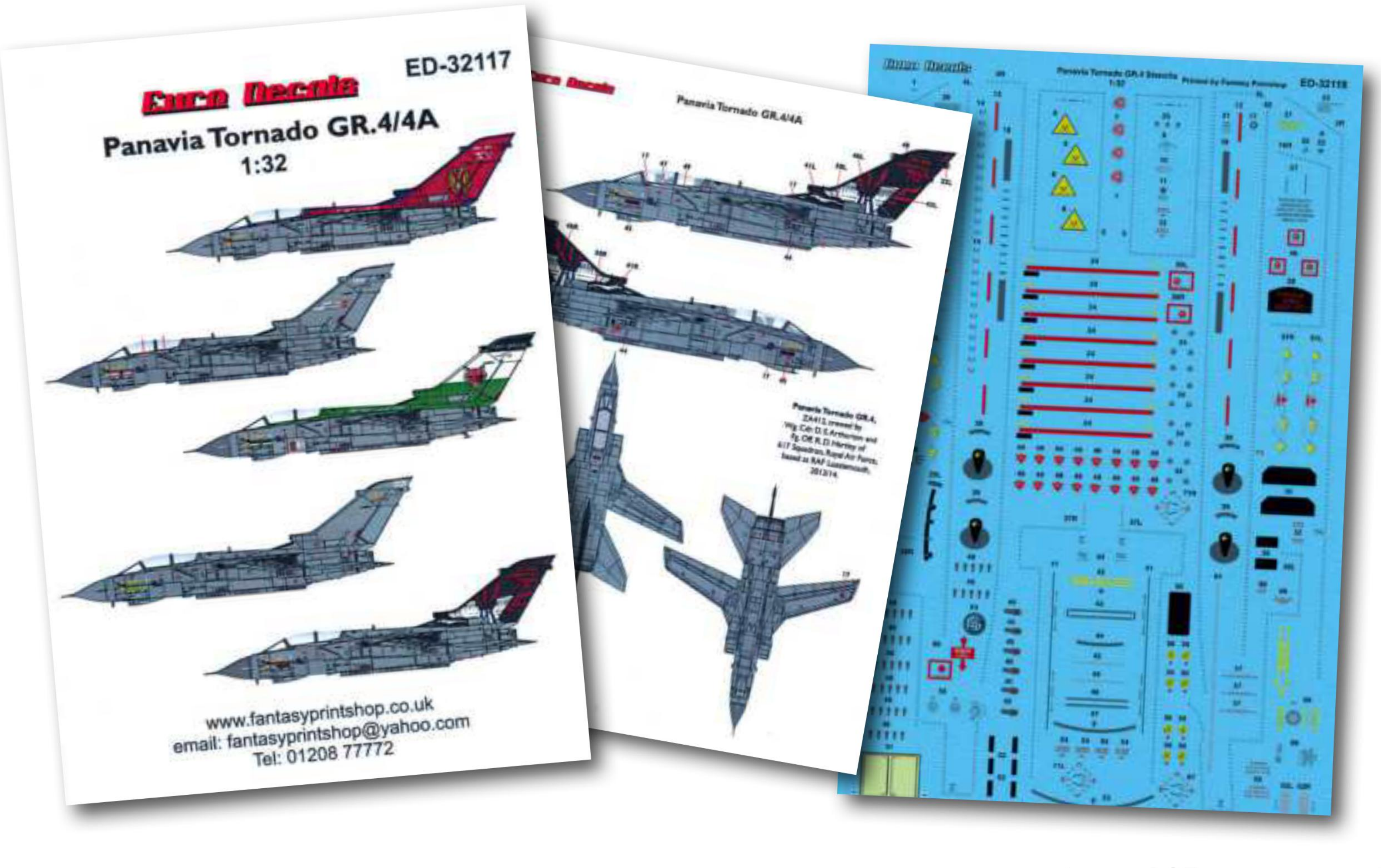
01: Tornado GR.4, ZA461 with No. XV(R) Squadron at RAF Lossiemouth in 2015. This is a special scheme applied for the Squadron's 100th anniversary. The scheme is overall Medium Sea Grey with a Cherry Red tail fin carrying the unit's hind's head emblem. The Red extends along the fuselage spine with a Roundel Blue outline.

02: Tornado GR.4A, ZA405 with No. 12 Squadron at RAF Lossiemouth in 2015. This is another scheme celebrating the Squadron's 100th Anniversary. The scheme is overall Medium Sea Grey with a large portrait of the Squadron's fox's head badge on the tail fin. The tail fin colours are split roughly into thirds horizontally with Gloss Black at the top, Gloss White in the centre and Gloss Dark Green at the base, extending along the fuselage spine and canopy framing.

03: Tornado GR.4, ZA542 '021' with No. 31 Squadron when operating at Gloia del Colle in Italy in 2011 on Operation Ellamy. The very much standard scheme is overall Medium Sea Grey.

04: Tornado GR.4, ZA560 'EB-Q' with No. 41(R) TES Squadron at RAF Coningsby in 2017. The scheme is a rather subdued 100th Anniversary special with some small text on the tail fin mentioning the occasion. Again, the scheme is overall Medium Sea Grey.

05: Tornado GR.4, ZA412 with No. 617 'Dambusters' Squadron at RAF Lossiemouth 2013-2014. The overall scheme is Medium Sea Grey with superb tail fin artwork celebrating the 70th Anniversary of the unit's famous raid on the German dams in May 1943.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Panavia Tornado GR.4
Panavia Tornado GR.4 Stencils
ED-32118

PANAVIA TORNADO GR.4 STENCILS (ED32118)

This great A5 sized sheet is covered with a stencilling items to apply to your large Tornado model. Four-view line diagrams clearly show where all of the items belong. As well as the airframe and pylons, there are items also for the two sizes of fuel tank, BOZ-107 and Sky Shadow pods.

This sheet has also been released in 1:72 and 1:48 scales. See the web site below for details.

Thanks to Fantasy Printshop for their latest Euro Decal sheets for review. See their web site for details: fantasyprintshop.co.uk or phone 01208 77772.

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SAMPLES FOR REVIEW

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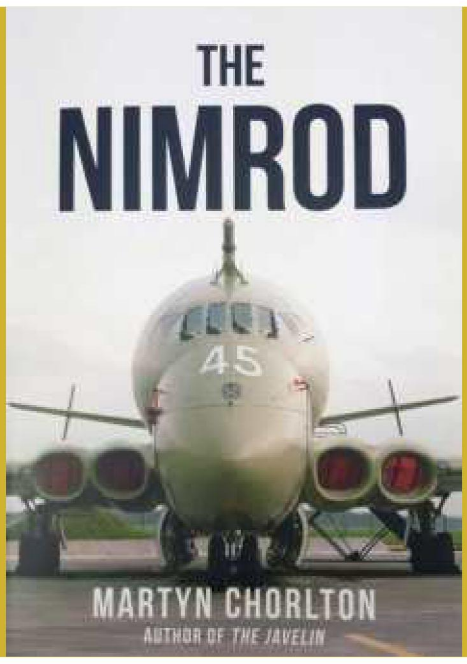


Amberley Books

The Nimrod

www.amberley-books.com

- By Martyn Chorlton
- ISBN: 978-144569-804-5
- Guide Price £14.99
- 96pp softback, 234 x 165mm
- www.amberley-books.com

First entering operational use with the Royal Air Force on the 2nd October 1969, the Hawker Siddeley Nimrod MR.1 served primarily in the maritime reconnaissance role as well as other roles detailed in the book until 2011 when the type was finally withdrawn.

Conceived in the 1950's as a replacement for the Avro Shackleton (which at this time had only been in service for five years) other types were considered such as the French built Breguet Atlantic, the Vickers VC-10, Vickers Vanguard, two Hawker Siddeley Trident proposals and the de Havilland Comet.

After trials and evaluations the Vanguard and VC-10 were soon discounted leaving the two Tridents and Comet in the running. Designated HS.801 (de Havilland now part of Hawker Siddeley) the Comet was redesigned to accommodate four Rolls Royce Spey engines that would give the aircraft more range and fuel efficiency and along with other factors such as the ability to shut down three of the four engines to increase endurance even further, the design was eventually chosen as the Shackleton replacement.

This new book by Martyn Chorlton looks at the concept, development and service use of the Nimrod and although it's not huge, it is very well written and illustrated with many B&W and colour images (with two provided from yours truly on page 84) of this impressive aircraft.

As stated the book looks at the aircraft from the start of its life to the end of its service and chapters include the ill-fated Nimrod AEW project (I always referred to it as the Airborne Elephant, White) which although the RAF wanted the American built E-3 AWACS (because it worked), the UK MOD (Ministry of Defence) insisted on developing their own AEW aircraft based on the Nimrod airframe. Some ten years and £10 billion later the project was cancelled, the airframes scrapped and the E-3 AWACS was purchased anyway.

Another chapter details another ill-fated Nimrod development, the MRA.4 which was to be an up-rated and improved airframe that would replace the elderly MR.2's then in service. The contract cost the UK taxpayer £4 billion, only to see the virtually completed airframes scrapped during 2011when the government pulled the plug and left the UK (an island nation) without any maritime patrol aircraft for nine years until the Boeing P-8 Poseidon entered service this year (2020).

Other chapters include the combat service of the Nimrod during the 'Cod Wars' of the 1970's, the Falkland Islands conflict in 1982, the Gulf Wars in the 90's and Afghanistan. The ELINT (Electronic Intelligence) R.1 version is also described and I always remember at the time the government denying the existence of these sensitive aircraft but aircraft enthusiasts knew all about them anyway. One time during 1990 I was at RAF Wyton in the UK being shown around as it was the fortieth anniversary of the Canberra which was based there. Also based at Wyton were the three Nimrod R.1's of 51 squadron so I asked the young Flight Lieutenant showing me around "where's the Nimrods then?" to which he replied "they are… elsewhere". I'm surprised they didn't throw me off the base there and then!

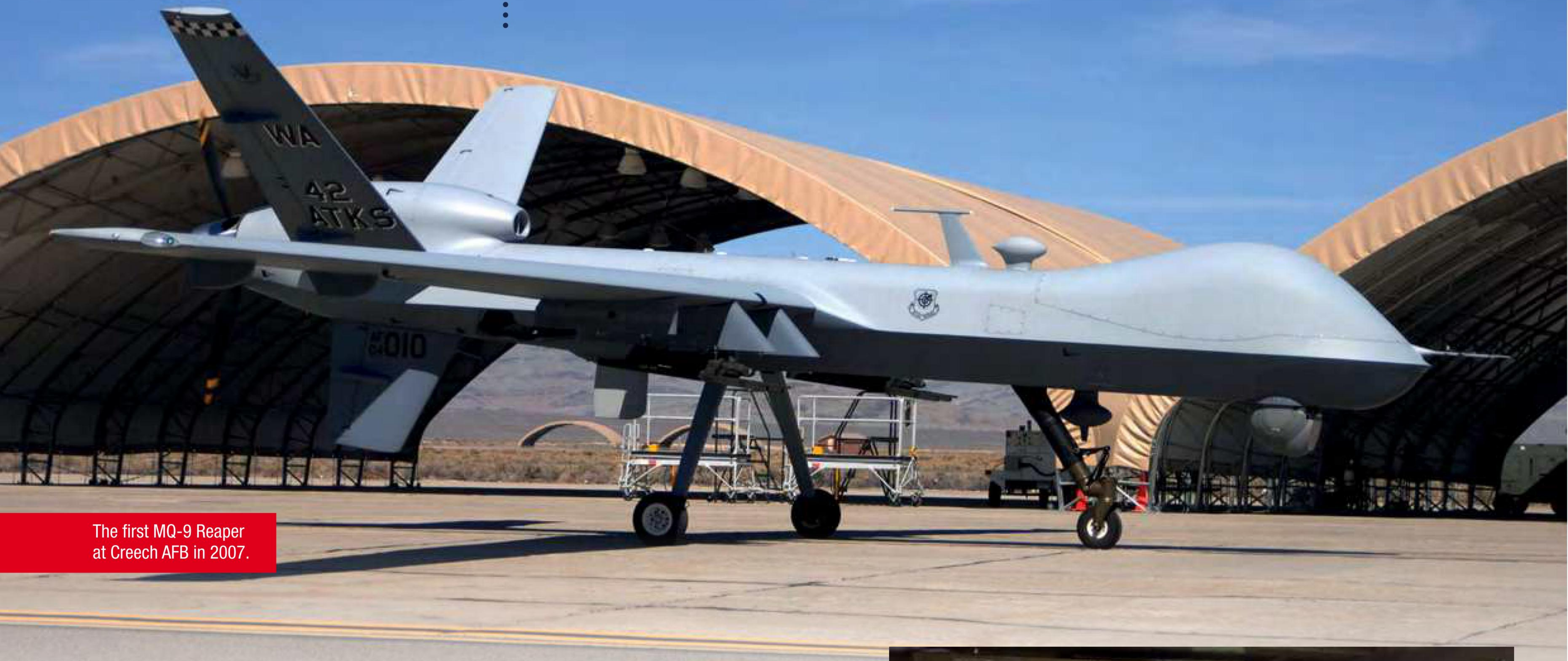
This is a lovely little book, very well written and worth getting just for the description of how Sidewinder missiles were hastily fitted and test-fired during the lead up to the Falklands conflict along with an even hastier fit of an air-refuelling probe even as the UK task force was sailing towards the islands.

Highly recommended if you have a passion for the Nimrod or just military aviation in general.

Many many thanks to Martyn Chorlton for the complimentary copy.
The book is published by Amberley, ISBN number is 978-1-44569-804-5, and is available from most book sellers as well as directly online from Amberley at; www.amberley-books.com ■

GENERAL ATOMICS MQ-9 REAPER

Background, specifications and operational detail on the MQ-9 Reaper unmanned aerial vehicle.



The first MQ-9 Reaper at Creech AFB in 2007.

The General Atomics MQ-9 Reaper, sometimes called Predator B, is an unmanned aerial vehicle (UAV) capable of remotely controlled or autonomous flight operations developed by General Atomics Aeronautical Systems (GA-ASI) primarily for the United States Air Force (USAF). The MQ-9 and other UAVs are referred to as Remotely Piloted Vehicles/Aircraft (RPV/RPA) by the USAF to indicate their human ground controllers.

The MQ-9 is the first hunter-killer UAV designed for long-endurance, high-altitude surveillance. In 2006, the then–Chief of Staff of the United States Air Force General T. Michael Moseley said: "We've moved from using UAVs primarily in intelligence, surveillance, and reconnaissance roles before Operation Iraqi Freedom, to a true hunter-killer role with the Reaper."

The MQ-9 is a larger, heavier, and more capable aircraft than the earlier General Atomics MQ-1 Predator; it can be controlled by the same ground systems used to control MQ-1s. The Reaper has a 950-shaft-horsepower (712 kW) turboprop engine (compared to the Predator's 115 hp (86 kW) piston engine). The greater power allows the Reaper to carry 15 times more ordnance payload and cruise at about three times the speed of the MQ-1. The aircraft is monitored and controlled by aircrew in the Ground Control Station (GCS), including weapons employment.

MQ-1 Predator controls

In 2008, the New York Air National Guard 174th Attack Wing began the transition from F-16 piloted fighters to MQ-9A Reapers, becoming the first fighter unit to convert entirely to unmanned combat aerial vehicle (UCAV) use. In March 2011, the U.S. Air Force was training more pilots for advanced unmanned aerial vehicles than for any other single weapons system. The Reaper is also used by the U.S. Customs and Border Protection, and the militaries of several other countries.

The USAF operated 195 MQ-9 Reapers as of September 2016, and plans to keep the MQ-9 in service into the 2030s.

MQ-9 takes off in Afghanistan, 1 October 2007.

Origins

The General Atomics "Predator B-001", a proof-of-concept aircraft, first flew on 2 February 2001. Abraham Karem is the designer of the Predator. The B-001 was powered by an AlliedSignal Garrett TPE331-10T turboprop engine with 950 shaft horsepower (710 kW). It had an airframe that was based on the standard Predator airframe, except with an enlarged fuselage and wings lengthened from 48 feet (15 m) to 66 feet (20 m). The B-001 had a speed of 220 knots (410 km/h; 250 mph) and could carry a payload of 750 pounds (340 kg) to an altitude of 50,000 feet (15,000 m) with an endurance of 30 hours.

The company refined the design, taking it in two separate directions. The first was a jet-powered version; "Predator B-002" was fitted with a Williams FJ44-2A turbofan engine with 10.2 kilonewtons (2,300 lbf; 1,040 kgf) thrust. It had payload capacity of 475 pounds (215 kg), a ceiling of 60,000 feet (18 km) and endurance of 12 hours. The USAF ordered two airframes for evaluation, delivered in 2007. The first two airframes delivered with prototypes B-001 and B-002 (now in the USAF museum at Wright-Patterson AFB). B-002 was originally equipped with the FJ-44 engine but it was removed and a TPE-331-10T was installed so that the USAF could take delivery of two aircraft in the same configuration.

The second direction the design took was the "Predator B-003", referred to by GA as the "Altair", which has a new airframe with an 84-foot (26 m) wingspan and a take-off weight of approximately 7,000 pounds (3,200 kg). Like the Predator B-001, it is powered by a TPE-331-10YGD turboprop. This variant has a payload capacity of 3,000 pounds (1,400 kg), a maximum ceiling of 52,000 feet (16 km), and an endurance of 36 hours.

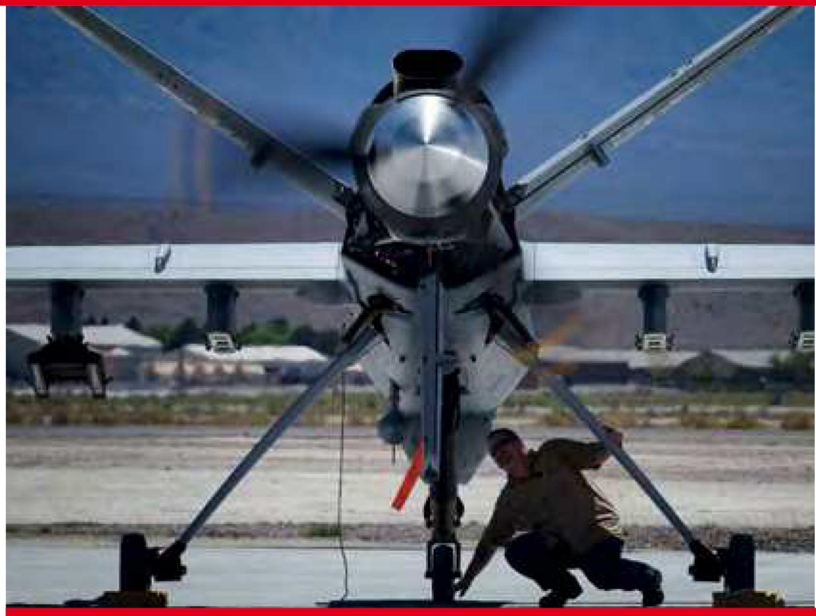
In October 2001, the USAF signed a contract for an initial pair of Predator Bs (001 and 002) for evaluation. Designated YMQ-9s due to their prototype role, they were delivered in 2002. The USAF referred to it as "Predator B" until it was renamed "Reaper". The USAF aimed for the Predator B to provide an improved "deadly persistence" capability, flying over a combat area night-and-day waiting for a target to present itself, complementing piloted attack aircraft, typically used to drop larger quantities of ordnance on a target, while a cheaper RPV can operate almost continuously using ground controllers working in shifts, but carrying less ordnance.

Operation

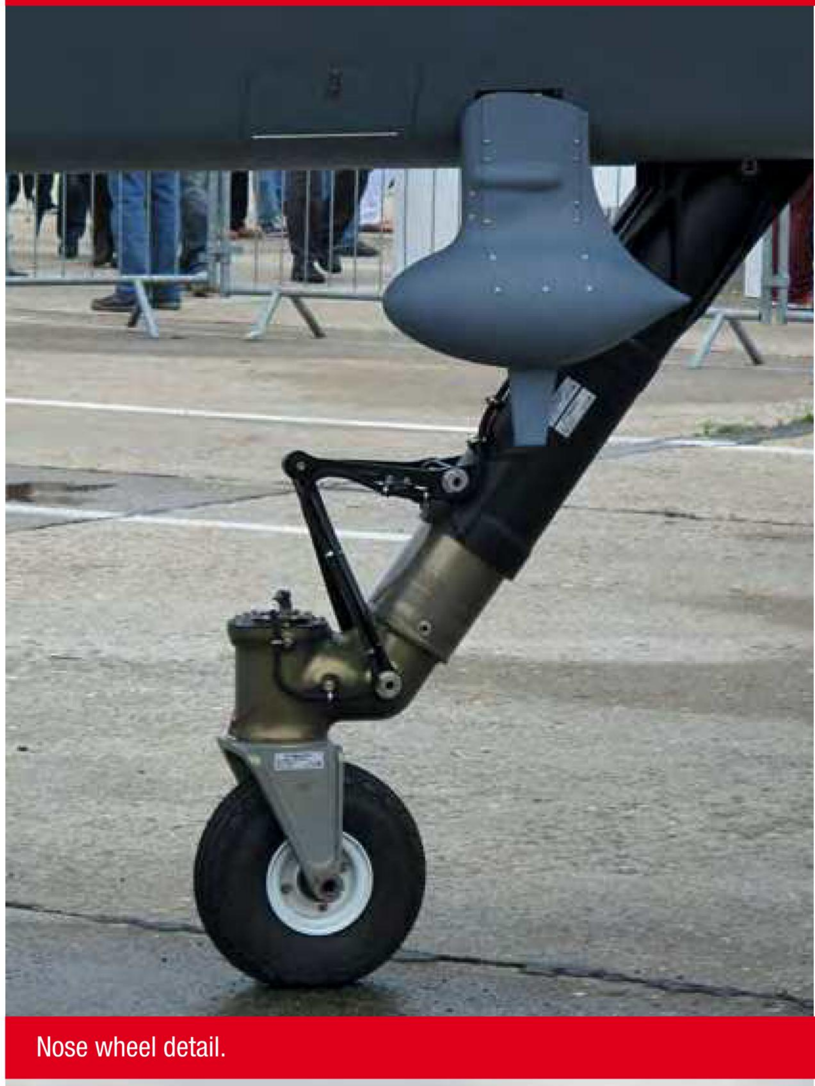
Satellite antenna and sensors of an NOAA-NASA flight demonstrator, 2005

MQ-9 Reaper crews (Pilots, Sensor Operators and Mission Intelligence Coordinators), stationed at bases such as Creech Air Force Base, near Las Vegas, Nevada, can hunt for targets and observe terrain using multiple sensors, including a thermographic camera. One claim was that the on-board camera is able to read a license plate from two miles (3.2 km) away. An operator's command takes 1.2 seconds to reach the drone via a satellite link. The MQ-9 is fitted with six stores pylons; the inner stores pylons can carry a maximum of 1,500 pounds (680 kg) each and allow carriage of external fuel tanks. The mid-wing stores pylons can carry a maximum of 600 pounds (270 kg) each, while the outer stores pylons can carry a maximum of 200 pounds (91 kg) each. An MQ-9 with two 1,000 pounds (450 kg) external fuel tanks and 1,000 pounds (450 kg) of munitions has an endurance of 42 hours. The Reaper has an endurance of 14 hours when fully loaded with munitions. The MQ-9 carries a variety of weapons including the GBU-12 Paveway II laser-guided bomb, the AGM-114 Hellfire II air-to-ground missiles, the AIM-9 Sidewinder, and the GBU-38 Joint Direct Attack Munition (JDAM). Tests are underway to allow for the addition of the AIM-92 Stinger air-to-air missile.

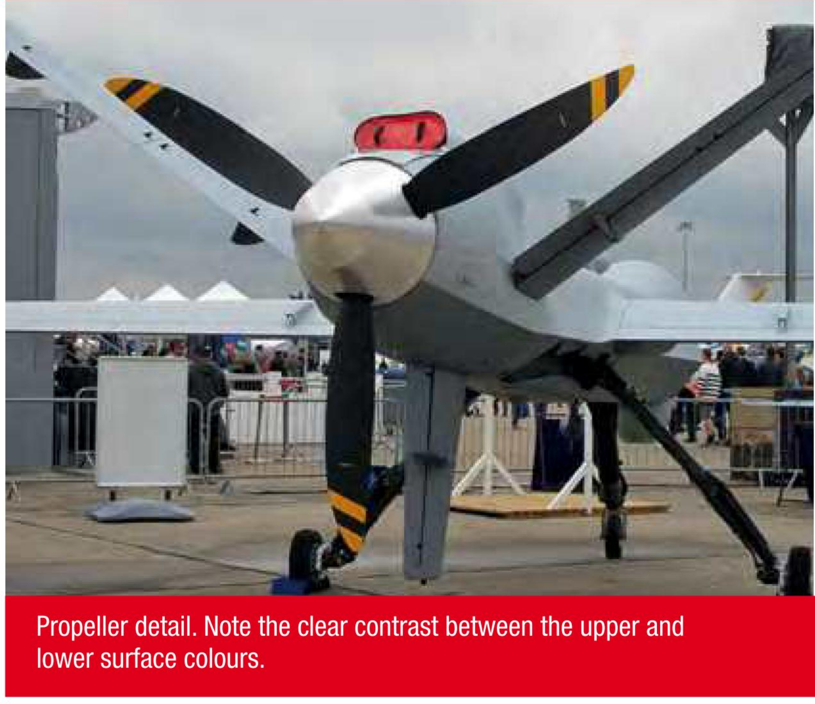
By October 2007, the USAF owned nine Reapers, and by December 2010 had 57 with plans to buy another 272, for a total of 329 Reapers. Critics have stated that the USAF's insistence on qualified pilots flying RPVs is a bottleneck to expanding deployment. USAF Major General William Rew stated on 5 August 2008, "For the way we fly them right now"—fully integrated into air operations and often flying missions alongside manned aircraft—"we want pilots to fly them." This reportedly



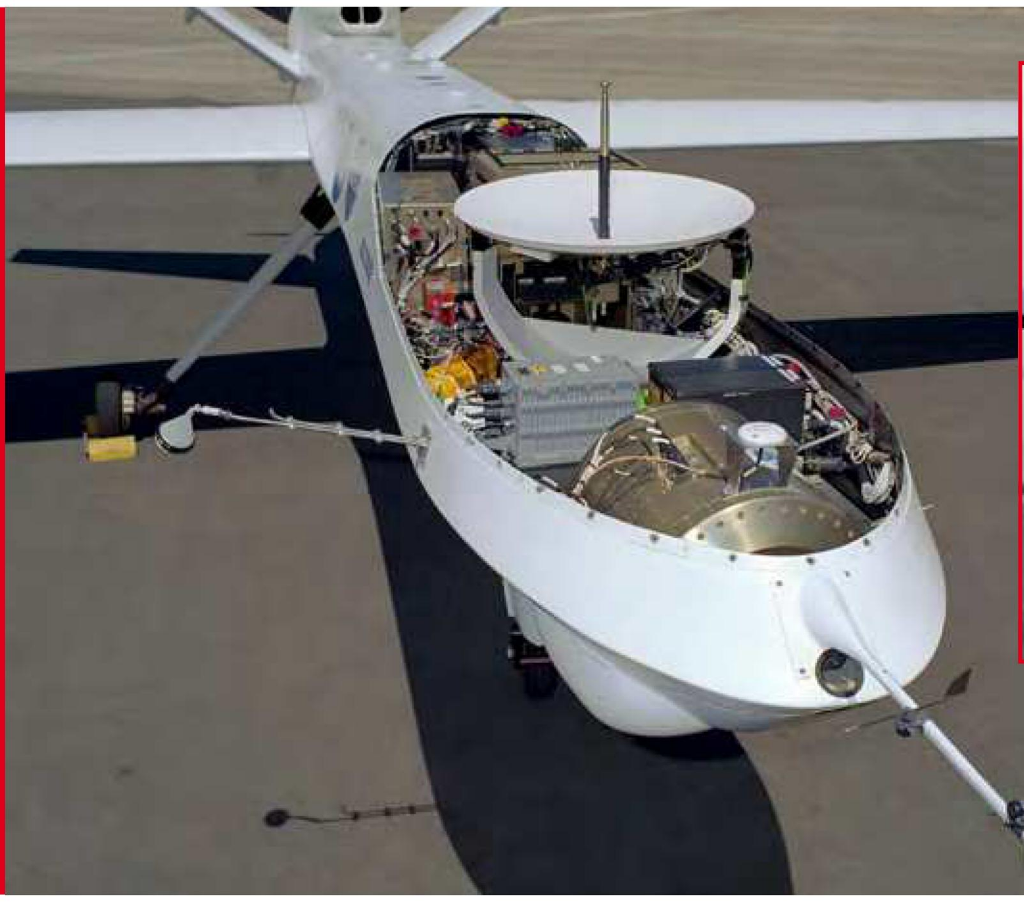
The tail end of a Reaper. Note the highly polished propeller spinner.



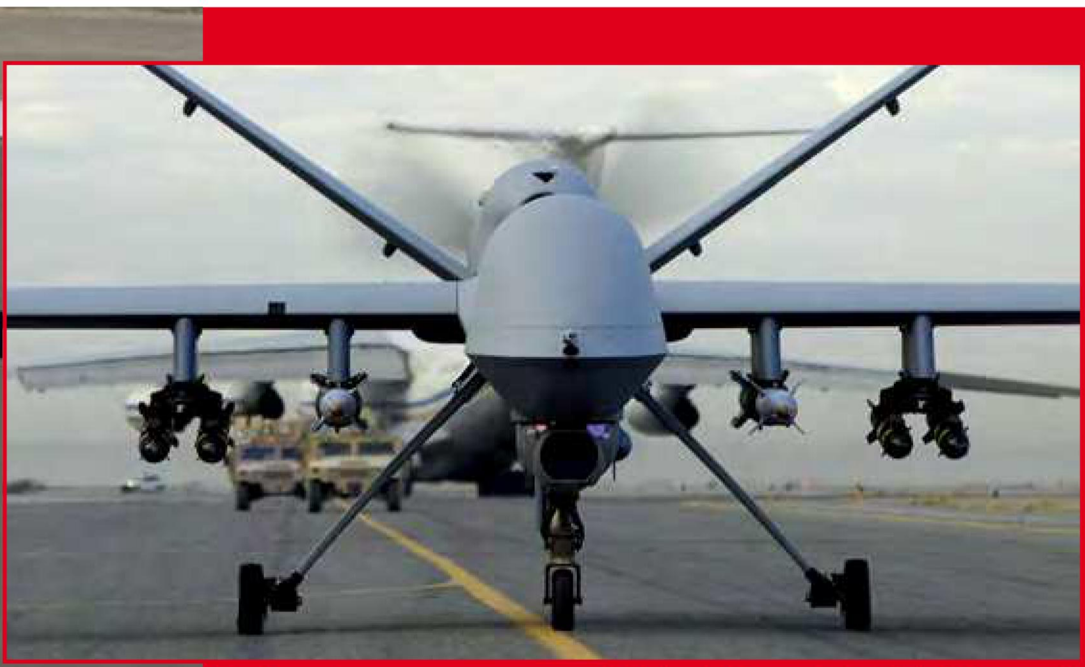
Nose wheel detail.



Propeller detail. Note the clear contrast between the upper and lower surface colours.



The Reaper's Sat Comms.



A fully loaded Reaper taxis. GBU-12 Paveway II bombs and Hellfire missiles are in board.

has exacerbated losses of USAF aircraft in comparison with US Army operations. In March 2011, U.S. Department of Defense Secretary Robert Gates stated that, while manned aircraft are needed, the USAF must recognize "the enormous strategic and cultural implications of the vast expansion in remotely piloted vehicles..." and stated that as the service buys manned fighters and bombers, it must give equal weight to unmanned drones and "the service's important role in the cyber and space domains."

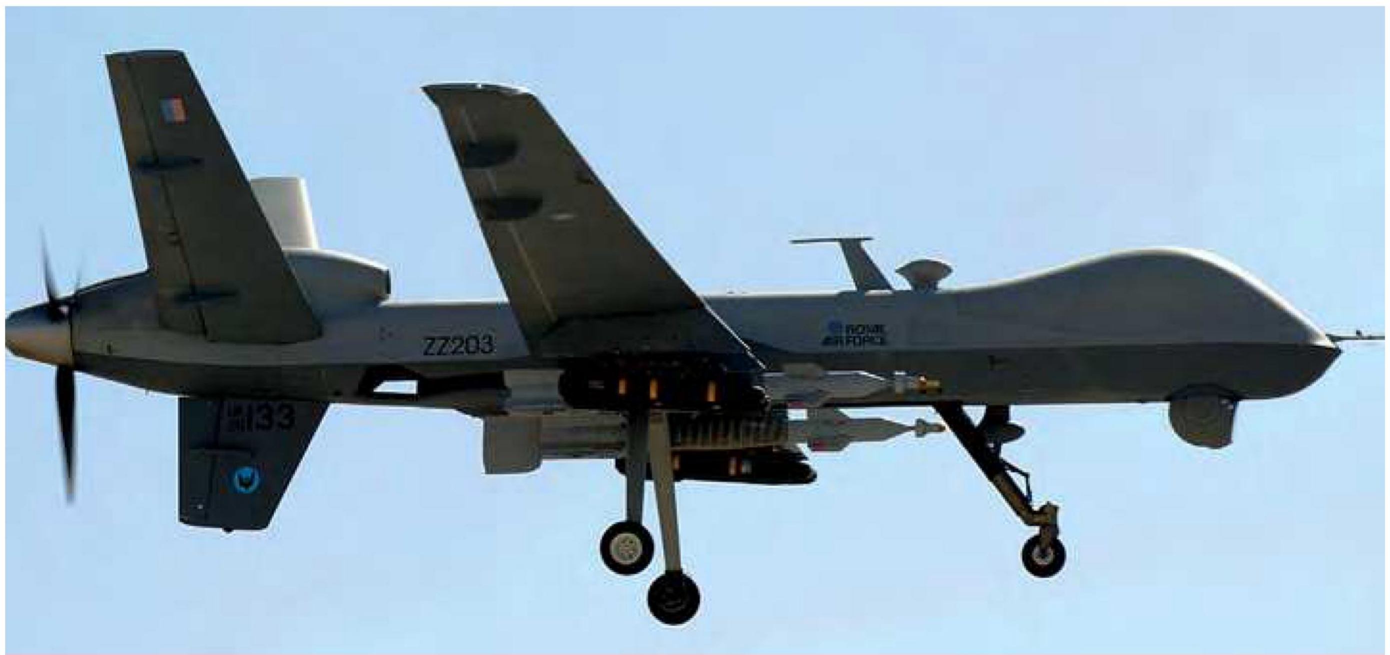
In 2013, the Air Force Special Operations Command (AFSOC) sought the ability to pack up an MQ-9 in less than eight hours, fly it anywhere in the world aboard a C-17 Globemaster III, and then have it ready to fly in another eight hours to support special operations teams at places with no infrastructure. MQ-1 and MQ-9 drones must fly aboard cargo aircraft to travel long distances as they lack the refuelling technology or speed to travel themselves; the C-17 is large enough to carry the aircraft and support systems and can land on short runways. Pilots traveling with the Reaper will use the ground control station to launch and land the aircraft, while most of the flying will be done by US-based pilots.

Testbed and Upgrades

In November 2012, Raytheon completed ground verification tests for the ADM-160 MALD and MALD-J for integration onto the Reaper for an unmanned suppression of enemy air defences capability. On 12 April 2013, a company-owned MQ-9 equipped with a jamming pod and digital receiver/exciter successfully demonstrated its electronic warfare capability at Marine Corps Air Station (MCAS) Yuma, performing its mission in coordination with over 20 participating aircraft. A second electronic warfare test, fitted with the Northrop Grumman Pandora EW System, was conducted on 22 October 2013 with other unmanned aircraft and Northrop Grumman EA-6B Prowlers, showing effectiveness in a multi-node approach against a more capable IADS.

In 2011, the U.S. Missile Defense Agency (MDA) reported its interest in using the Reaper and its MTS-B sensor to provide firing quality data for early interception of ballistic missile launches. The MDA is exploring concepts to use the UAV's EO/IR sensor to achieve "launch-on-remote" capabilities with missile interceptors before detection by Aegis radars. At least two aircraft would be needed to triangulate a target to provide high-fidelity data. The MTS-B includes short and mid-wave IR bands, optimal for tracking launch and rocket burn. In 2013, the MDA terminated plans to build a follow-on to the two orbiting Space Tracking and Surveillance System (STSS) satellites due to near-term costs, opting to continue testing the Reaper for ballistic missile target discrimination. The MDA planned to test the improved MTS-C sensor, which adds a long-wave IR detector optimized for tracking cold bodies such as missiles and warheads after booster burnout, or plumes and exhaust. The goal is to use data from multiple high-flying UAVs to provide an off-board cue to launch an SM-3 missile from an Aegis ship. Two Reapers demonstrated their ability to track ballistic missiles using their MTS-B EO/IR turret during a test in late June 2016.

In June 2015, a study by the USAF's Scientific Advisory Board identified several improvements for operating the Reaper in contested airspace; adding readily available sensors, weapons, and threat detection and countermeasures could increase situational awareness and enable riskier deployments. Suggestions included a radar warning receiver (RWR) to know when it's being targeted, air-to-air and miniature air-to-ground weapons, manned-unmanned teaming, multi-UAV control, automatic take-offs and landings, and precision navigation and timing systems to fly in GPS-denied areas. Another idea was redesigned ground control stations with user-friendly video game-like controllers and touchscreen maps to access data without overwhelming operators.



A Royal Air Force MQ-9 Reaper, 1 November 2010

In October 2015, Air Force deputy chief of staff for ISR Robert Otto suggested redesigning the MQ-9's GCS to be operated by one person for most missions rather than two (to fly and work the sensors) to simplify operations and reduce manpower requirements by hundreds of sensor operators. Introducing an auto-land capability would also reduce the Reaper's manpower requirements to staff launch and recovery teams. Automatic take-off and landing capabilities are already present in the RQ-4 Global Hawk and MQ-1C Gray Eagle, and are planned to be provided to the MQ-9 in 2017. The Air Force requires the manually loaded Reaper to operate from a runway at least 5,000 ft (1.5 km) long, but automated take-offs and landings would enable it to operate from a 3,000 ft (0.91 km) runway.

In April 2017, an MQ-9 Block 5 flew with a Raytheon ALR-69A RWR in its payload pod to demonstrate the aircraft's ability to conduct missions in the proximity of threat radars and air defences, the first time this capability was demonstrated on a remotely piloted aircraft. In September 2020, a Reaper was flown carrying two Hellfire missiles on each of the stations previously reserved for 500 lb bombs or fuel tanks. A software upgrade doubled the aircraft's capacity to eight missiles

Design

A typical MQ-9 system consists of multiple aircraft, ground control station, communications equipment, maintenance spares, and personnel. A military flight crew includes a pilot, sensor operator, and Mission Intelligence Coordinator.[5] The aircraft is powered by a 950 horsepower (710 kW) turboprop, with a maximum speed of about 260 knots (480 km/h; 300 mph) and a cruising speed of 150–170 knots (170–200 mph; 280–310 km/h). With a 66 ft (20 m) wingspan, and a maximum payload of 3,800 lb (1,700 kg), the MQ-9 can be armed with a variety of weaponry, including Hellfire missiles and 500-lb laser-guided bomb units. Endurance is 30 hours when conducting ISR missions, which decreases to 23 hours if it is carrying a full weapons load. The Reaper has a range of 1,000 nmi (1,150 mi; 1,850 km) and an operational altitude of 50,000 ft (15,000 m), which makes it especially useful for long-term loitering operations, both for surveillance and support of ground troops.

The Predator and Reaper were designed for military operations and not intended to operate among crowded airline traffic. The aircraft typically lack systems capable of complying with FAA See-And-Avoid regulations. On 18 May 2006, the Federal Aviation Administration (FAA) issued a certificate of authorization allowing MQ-1 and MQ-9 UAVs to fly in U.S. civil airspace to search for survivors of disasters. In 2005, requests were made for MQ-9s to be used in search and rescue operations following Hurricane Katrina but, as there was no FAA authorization in place at the time, it was not used.

An MQ-9 can adopt various mission kits and combinations of weapons and sensors payloads to meet combat requirements. Its Raytheon AN/AAS-52[citation needed] multi-spectral targeting sensor suite includes a colour/monochrome daylight TV, infrared, and image-intensified TV with laser rangefinder/laser designator to designate targets for laser guided munitions. The aircraft is also equipped with the Lynx Multi-mode Radar that contains synthetic aperture radar (SAR) that can operate in both spotlight and strip modes, and ground moving target indication (GMTI) with Dismount Moving Target Indicator (DMTI) and Maritime Wide-Area Search (MWAS) capabilities. The Reaper was used as a test bed for Gorgon Stare, a wide-area surveillance sensor system. Increment 1 of the system was first fielded in March 2011 on the Reaper and could cover an area of 16 km2 (6.2 sq mi); increment 2, incorporating ARGUS-IS and expanding the coverage area to 100 km2 (39 sq mi), achieved initial operating capability (IOC) in early 2014. The system has 368 cameras capable of capturing five million pixels each to create an image of about 1.8 billion pixels; video is collected at 12 frames per second, producing several terabytes of data per minute.

In January 2012, General Atomics released a new trailing arm design for the Reaper's main landing gear; benefits include an over 30 percent increase in landing weight capacity, a 12 percent increase in gross take-off weight (from 10,500 pounds (4,800 kg) to 11,700 pounds (5,300 kg)), a maintenance-free shock absorber (eliminating the need for nitrogen pressurization), a fully rejected take-off brake system, and provisions for automatic take-off and landing capability and Anti-lock Brake System (ABS) field upgrades. In April 2012, General Atomics announced possible upgrades to USAF Reapers, including two extra 100 US gallons (380 l) fuel pods under the wings to increase endurance to 37 hours. The wingspan can also be increased to 88 feet (27 m), increasing endurance to 42 hours. The USAF has bought 38 Reaper Extended Range (ER) versions, carrying external fuel tanks (which don't affect weapon capacity), the heavy-weight landing gear, a four-bladed propeller, a new fuel management system which ensures fuel and thermal balance among external tank, wing, and fuselage fuel sources, and an alcohol-water injection (AWI) system to shorten required runway take-off length; these features increase endurance from 27 to 33–35 hours, while the company is still pitching the lengthened wing option. The Reaper ER first flew operationally in August 2015. The aircraft also has the sensor ball replaced with a high-definition camera, better communications so ground controllers can see the higher quality video, software to enable automatic detection of threats and tracking of 12 moving targets at once, and the ability to "super ripple" fire missiles within 0.32 seconds of each other.

On 25 February 2016, General Atomics announced a successful test flight of the new Predator-B/ER version. This new version has had the wingspan extended to 79 feet, increasing its endurance to 40 hours. Other improvements include "short-field take-off and landing performance and spoilers on the wings which enable precision automatic landings. The wings also have provisions for leading-edge de-ice and integrated low- and high-band RF antennas." ■

Body text and images adapted from Wikipedia https:// en.wikipedia.org/wiki/General_Atomics_MQ-9_Reaper

Reaper in flight. This offers a nice view of the upper surfaces.

Reaper UAV takes to the skies of southern Afghanistan.

NOW, VOYAGER

ON 6 January, the UK and French Air Forces flew a combined mission involving two RAF Voyager tankers escorting and refuelling four Armee de l'air Mirage 2000 fighters, en route to Africa.

The Long-Range Projection mission to Djibouti was a real-life demonstration of the Combined Joint Expeditionary Force Air Component's (CJEF(Air)) capability to project aircraft long distance at pace.

Describing the mission, Air Cdre Tim Below, the Defence Attaché in Paris, said

"Great to see French Mirage aircraft taking fuel from a RAF Voyager yesterday as they flew from France to a French airbase in Africa. This mission clearly demonstrates the close Franco-British relationship and our ability to work together to rapidly project air power across the globe. In doing so we have both improved our techniques and validated our procedures to ensure we are ready to act as part of the Combined Joint Expeditionary Force."

The Voyager tankers based at RAF Brize Norton in Oxfordshire provided Air-to-Air refuelling for the French jets throughout their near 4000-mile journey to North East Africa to take part in their Exercise SHAHEEN.

Explaining the role of the tankers, Flt Lt Rob Webb of the Air Mobility Force HQ said:

"Planning is undertaken by an Air-to-Air Refuelling Co-ordinator (AARC) who arranges and controls all aspects of the task. In this case, two RAF Voyagers in the dedicated Tanker role transferred 90,000 litres of fuel in support of the French Mission to North Africa, with one forward mounted in Greece to meet the transiting jets south of Crete for the final leg to Djibouti."

He added: *"Missions of this nature allow the RAF to practise and demonstrate close integration with Allied Nations to extend and project military effect in support of Operations."*

The CJEF is a French-UK military force that was created following the signing of the Lancaster House Treaties by President Sarkozy and Prime Minister Cameron in 2010, and which was re-affirmed by President Macron and Prime Minister May in 2018. The CJEF recently declared full Operational Capability and this mission was a timely demonstration of the regular cooperation between the RAF and the French Air & Space Force. ■

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SAMPLES FOR REVIEW

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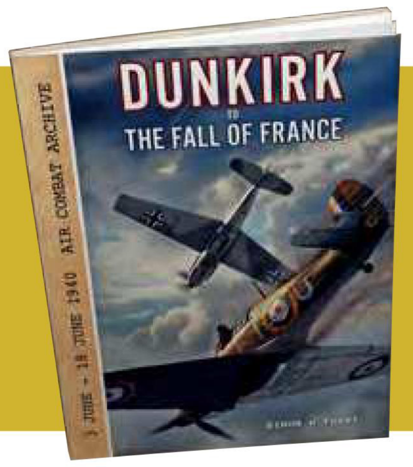
RED KITE

This month we are pleased to introduce a further three lovely books from Red Kite / Wingleader. Firstly, we have the second book covering the few weeks from Dunkirk to the start of the Battle of Britain in July 1940. Next is Number 9 of their Battle of Britain Combat Archive series and then we have a book on the Avro Lancaster batches built from 1941 to 1943. We take a closer look at these books in our review below. For those readers who have missed our previous reviews there are several Red Kite books featuring aircraft from the time of the Battle of Britain. No doubt while researching for the Battle of Britain Archive, loads of other information has been unearthed that are forming the basis of the other books. See their web site wingleader.co.uk and you will see what we mean.



Dunkirk – Air Combat Archive (3 June to 18 June 1940)

- By Simon W Parry
- Published by Red Kite / Wingleader
- Guide Price £20
- ISBN: 978-1-906592-46-2
- 88pp, softback, 297 x 210mm

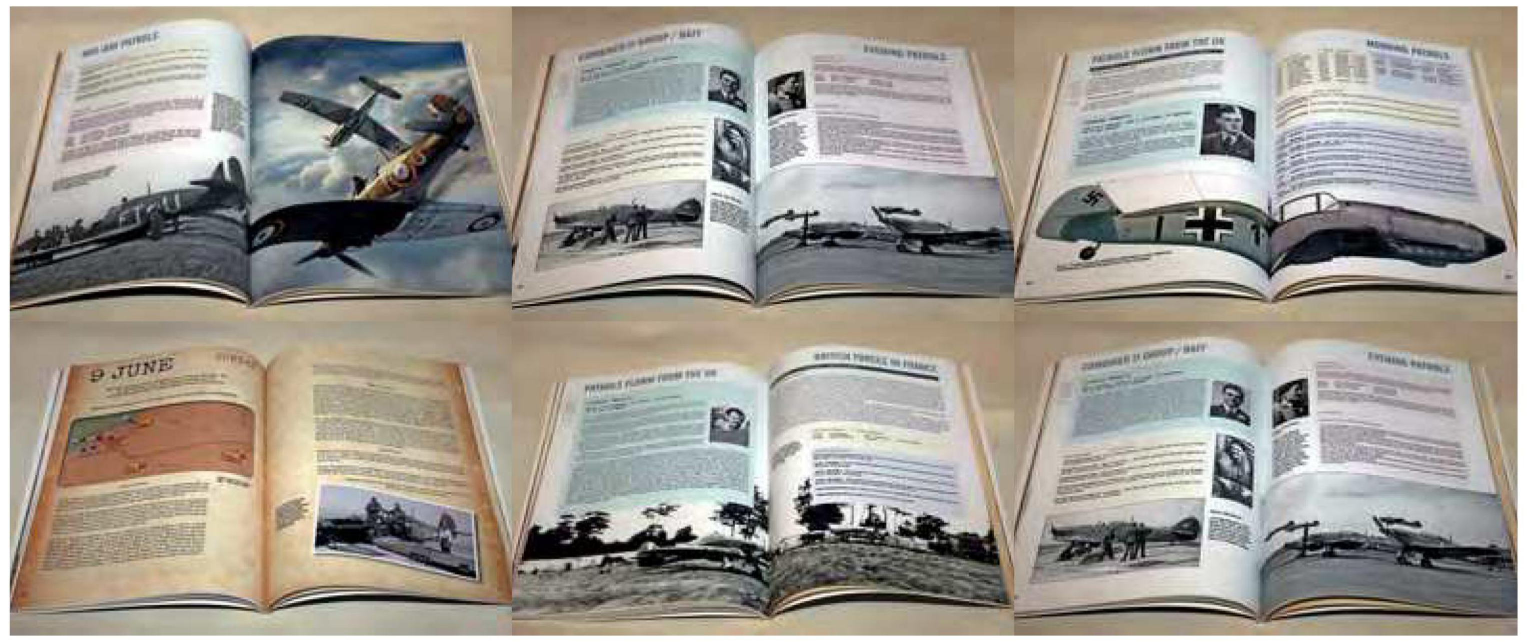
We reviewed the first Dunkirk volume in our January 2020 issue and now about a year later, we have more of the RAF's activity between Dunkirk and the Battle of Britain. It is wrong to think that after thousands of British troops were picked up from the beaches near Dunkirk that all activity in Northern France ended. This new book picks up where the last one left off with the RAF still operating from airfields in Northern France.

After the British troops were rescued from Dunkirk there were still many French troops to pick up. More British troops were still in Northern France to the west of Dunkirk and it is recorded that almost 192,000 were rescued from various French ports in the weeks following Dunkirk. In the middle of June 40,000 British troops were sent to France to support the French in an effort to deter the French surrender but were withdrawn a week later. All of this activity was of course subject to the attention of the Luftwaffe as the German army advanced deeper into France, heading for Paris. Locally based RAF units supported by squadrons from RAF stations in the south of England were kept busy protecting the troops from the German bombers. RAF fighters were also providing protection for Blenheims, Fairey Battles, etc. that were supporting French aircraft in trying to stop the German ground advances.

This book continues, describing the daily activity of the RAF carrying out several patrols each day. What took place on those patrols is described in squadron intelligence reports and individual pilot's reports. Many pilot's photos appear with photos of their aircraft in all states of repair. Casualties on both sides are listed and maps show where many aircraft came down on French soil. Each day's account begins with a brief synopsis of the military situation on the ground and the RAF's position. As the days go by, the situation on the ground becomes increasing desperate as the German ground forces overpower the French.

June 18 is the last day of RAF flying from French bases. The final hours are very reminiscent of those scenes at the beginning of the Battle of Britain film as RAF fields are about to be overrun by the Germans. RAF ground crew destroy anything of use that they can't take away and any flyable aircraft leave for England. Ground crew take any transport that they can find and make their way to the French ports and join British army troops that are hoping to get back home by sea. Some lucky RAF personnel had an easy flight home in transport aircraft. There are always 'lighter' moments in any situation as the 73 Squadron Adjutant describes how one Flight Lieutenant was desperately trying to sell his car as the Germans are approaching and his aircraft engine is running. We can only imagine the language being aimed at the hapless car seller.

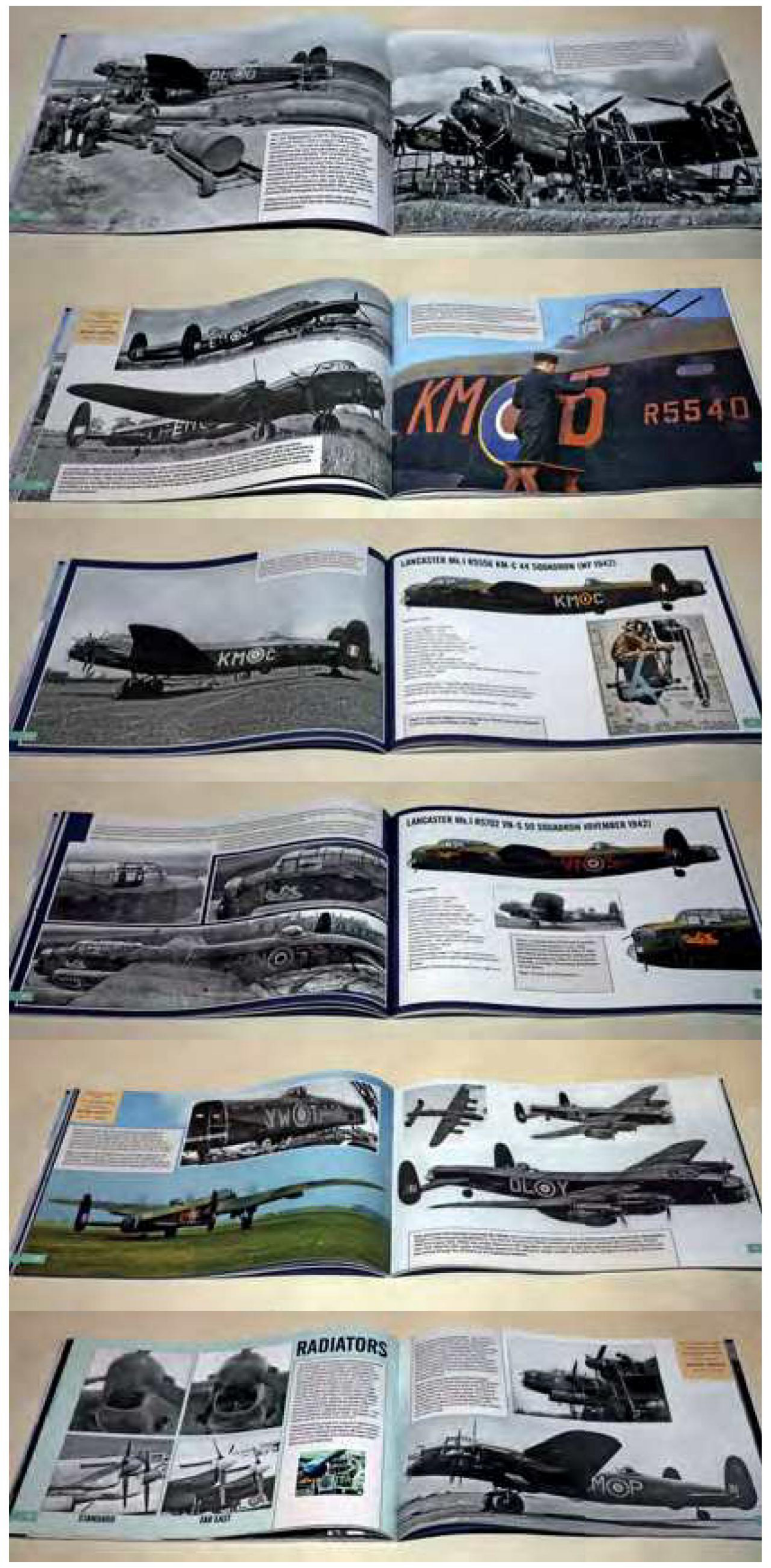
Again, this book is another excellent addition to those describing the RAF's operations during the summer of 1940. Whether a modeller looking for background references or just generally interested in this period of aviation history, this book is a great read revealing the fine detail of those desperate days of the fall of France.



WINGLEADER PHOTO ARCHIVE NUMBER 5
RICHARD ALEXANDER
AVRO LANCASTER Mk.I/III
EARLY PRODUCTION BATCHES 1941-1943

Avro Lancaster Mk.I/III Early Production Batches 1941-1943

- By Richard Alexander
- Published by Red Kite/Wingleader
- Guide Price £19.95
- ISBN: 978-1-906592-74-5
- 80pp softback, 210 x 297mm



This is the fifth in the Wingleader Photo Archive series following one each on the Hurricane Mk.I and Spitfire Mk.I and two on the Bf 109E. We can refer any reader about to build any of these aircraft straight to these books.

The Lancaster is a firm favourite with many modellers and this book will be ideal if you are thinking of buying or building a kit. It is only sad that the Wingnut Wings 1:48 Lancaster that was tantalisingly close seems to have gone, at least for the time being. It is hard to imagine that the kit that was so close to release has gone forever.

Whatever your preferred choice of Lancaster scale, you will find lots of valuable information in this book full of useful pictures some of which have not been published before. Obviously, most are in black and white but there is a surprising number printed in colour, as well as the colour artwork profiles at intervals throughout the book. The book begins with a description of how the Lancaster came into production and the first fact we learn is that early airframes carried a ventral gun turret, mounted roughly below the mid-upper turret. An extra turret was found impossible to control and was soon deleted from production and removed from the handful of in-service aircraft already delivered. No doubt many crews would later regret the absence of an under-belly set of guns when being attacked from below by Luftwaffe night fighters.

Each photo is captioned with fact-rich text. Those who enjoy placing their models in a working environment will find many photos of Lancasters being serviced and bombed-up. We also see close ups of the gun turrets, bomb aimer's blisters, bomb bay, instrument panels and main undercarriage. Several photos point out small modifications to aerials and intakes that all help us towards an accurate model.

This book is packed with really good reference photos and snippets of valuable information that will all be a great help with a build. Highly recommended and a great addition to the Wingleader Photo Archive series.

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BATTLE OF BRITAIN
COMBAT ARCHIVE
1 SEPTEMBER – 3 SEPTEMBER 1940

Battle of Britain Combat Archive No. 9 (1 September – 3 September 1940)

- By Simon W Parry
- Published by Red Kite/Wingleader
- Guide Price £25
- ISBN: 978-1-906592-65-3
- 112pp, softback, 297 x 210mm

We introduced this excellent history of the Battle of Britain series to readers back in our October 2019 issue when we reviewed Numbers 6 and 7 then Number 8 and now Number 9 has just arrived. This new book covers just three days of the Battle, the first three days in September 1940 when the Luftwaffe was making an all-out effort to finally cripple the Royal Air Force.

The Battle of Britain Combat Archive begins on the 10th July 1940 with Volume 1 reporting on the days from 10th July to 22nd July. It was planned to complete the Battle of Britain history in 12 similar sized volumes.

As the years have passed, so more information has become available and therefore a more complete account of what took place on each day can now be told. A superb piece of artwork showing action between a Hurricane and a Bf 109E adorns this front cover and the story of the encounter appears in the text.

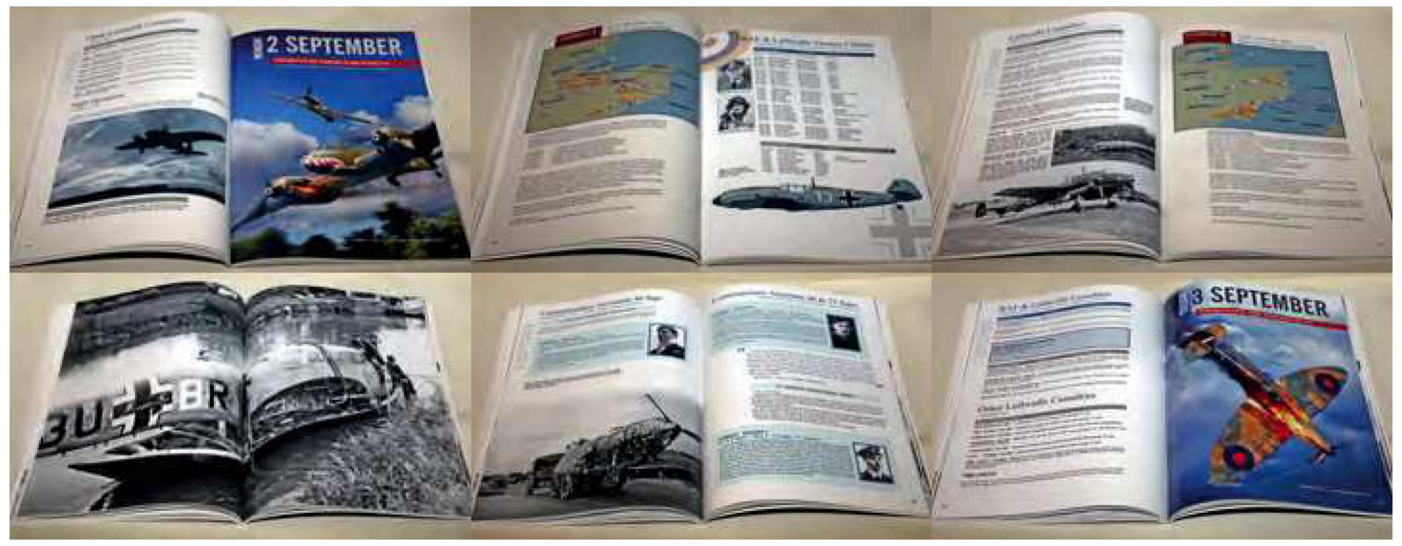
September 1 begins with a German raid on the Tilbury Docks at 10.45 by 32 bombers that were met by about 60 Spitfires and Hurricanes. The bomber's escorting fighters turned for home soon after crossing the English coast in the Dover and Folkestone area after encountering the RAF's fighters. After the various combats the RAF claimed about two Luftwaffe aircraft for every RAF fighter lost. German bombers with Me 109 escorts returned at 13.30 and both sides sustained a long list of casualties. Pilot's reports illustrated with some photos of crash sites follow covering about a dozen pages. A further German raid took place later that afternoon at 16.45 when about 40 assorted German bombers and fighters attacked airfields and targets of opportunity in Kent. One 603 Squadron Spitfire crash landed near Ilford, pilot safe and a German pilot died when attempting to land his 109 at Chilham in Kent. Coloured maps show these three raids and lists of casualties are shown for both sides of the action.

German aircraft would appear early the following morning on the plotting tables as three raids approached the Kent coast at 07.15. Their main targets were the docks at Gravesend and Chatham. Eleven squadrons were scrambled, seven to chase the Germans and five to defend airfields. Again, the action is described in fine detail using a dozen RAF pilot's combat reports and squadron intelligence reports. Five German attacks took place that day and each one is covered in fine detail.

The reports from those three early September 1940 days make fascinating reading with some famous names appearing on both sides of the fight such as 'Ginger' Lacey and Adolph Galland.

We really look forward to each of the Battle of Britain Combat Archive series as they are published. With several weeks of the Battle still remaining, we will see if Red Kite manage to keep the series to 12 volumes. At this time, we are doubtful. Only time will tell.

This series of books comes with the highest recommendation. Those who have not seen these books so far can order the earlier issues from the wingleader.co.uk web site or from Avid Reader/bookworldws.co.uk who are the UK distributor of the Red Kite range. If you are interested in this short period of WWII, one look at a copy and you could be hooked.



Duke Hawkins
Phantom II
F-4 E/F/EJ & RF-4

Phantom II
F-4 E/F/EJ & RF-4

- By Duke Hawkins with Peter Anthoni
- Published by H.M.H. Publications
- Guide Price £30.00
- ISBN: 978-2-931083-05-5
- 192pp softback, 240 x 240mm

This is the fifteenth book from Duke Hawkins in only four years. His aircraft profiles are excellent and ideal companions to a build of a series of modern military aircraft kits. This Phantom book is published at the same time as one on the SIAI Marchetti SF-260. The contrast between the two aircraft covered could not be starker, the mighty Phantom jet fighter/bomber and the SF-260, a small, two seat, piston engine powered basic trainer.

Duke Hawkins set the pattern in his first book on the Jaguar, showing the aircraft in detail from front to back, inside and out with lovely flying and static photos, all produced to the highest standard. The Phantom II needs no introduction, it has been around from 1960 and though in its twilight years is still flying with several air forces and has a huge following amongst aircraft enthusiasts. Over 5,000 were built. This book covers the versions that first appeared over the skies of Vietnam when the need for a Phantom with a powerful gun was recognised and the long-nosed F-4E entered service with the USAF. All Phantoms still in service are derivates of those early Vietnam War F-4Es.

The first couple of pages of the book are covered with general photos of the types covered and then we start with the in-detail photos with the fuselage. The contents of the book work from the tip of the nose to the fuselage tail cone. Around the nose, we are shown a close look at sensors, grills, guns, etc. before moving on to the air intakes. We peer down intakes, look at covers, grills and those huge splitter plates with their hundreds of tiny but essential holes. Next, we see the fuselage and several detailed photos of the wings. One valuable feature of the many photos is the weathered appearance of the airframe with their patchwork of slightly different coloured panels. Photos of Phantoms in flight show a patchwork of stained and clean panels on the underside.

Twelve pages of cockpit instrument panels and seats will be very useful when building a kit. Some of the Phantom versions featured in this book have differing panels and the amount of general pipework is amazing. Several pictures of the seats will be invaluable when adding and painting harness. Another area not generally easily viewed are the undercarriage bays, all shown here in great detail as are the undercarriage legs and wheels. Those modellers who love super-detailing models with panels removed can find dozens of photos when we see Phantoms in the maintenance hangar. Several photos of removed engines and examples of jet pipes all help with modelling these areas. Towards the back of the book, we see many detailed photos of weapons pylons and the items carried thereon.

Throughout the Phantom's long career, it has made a wonderful canvass for many special schemes as the F-4F shown on the book's cover. Many are shown in this book offering inspiration and help to those who love making colourful models. Japanese Phantoms are bowing out of service now with spectacular schemes that are shown in some superb photos. Virtually all air forces that have used the long-nosed Phantoms have special schemes included in this book.

We have reviewed several Duke Hawkins books over the last three or four years and have been impressed by them but this one is the cream that rises to the top. Whether a modeller of this beast of a jet or just a Phantom Phan you would be pleased to add this to your reference library. It is an excellent piece of work from this publisher.

Thanks to Avid Reader/Bookworld Wholesale for supplying the Red Kite and Duke Hawkins books for review this month. Check their web site bookworldws.co.uk for availability and ordering.

SAMPLES FOR REVIEW

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Companies in the European Union should also add our
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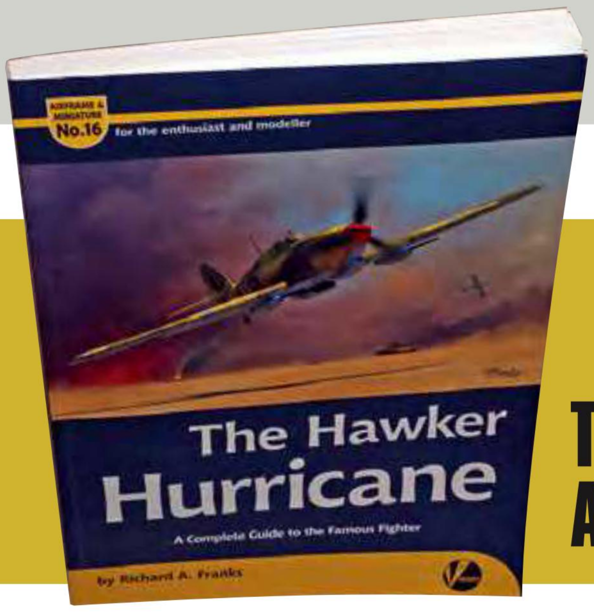

Airframe & Miniature
No.16
for the enthusiast and modeller
The Hawker Hurricane
A Complete Guide to the Famous Fighter
by Richard A. Franks

The Hawker Hurricane – Airframe and Miniature No.16
A Complete Guide to the Famous Fighter

- By Richard A. Franks
- Published by Valiant Wings Publishing Ltd
- Guide Price £24.95
- ISBN 978-1-912932-12-2
- 272pp softback, 297 x 210mm

We have been looking forward to seeing this latest addition to the Valiant Wings' Airframe and Miniature series from the time it was first announced. It has been worth the wait, as well as a page-turner, it is a real eye-opener. At 272 pages, it is one of the longest in the series. When we see the number of different versions of Spitfire from the late 1930s to the early 1950s it is easy to overlook the history of the Hurricane over a similar time span. It takes 27 pages, crammed with diagrams to show all the types and sub-types of Hurricane when most of us would think of just a Mk.I and Mk.II with not many obvious difference between the two. How wrong we can be can be seen in this book.

The first 45 pages if this book describe the development of the Hurricane. There is a surprisingly long list of nations that operated the Hurricane, over twenty, during WWII or in the post-war years. All of this is illustrated with dozens of black and white photos of Hurricanes in all situations, at home and abroad that will be ideal references of modellers.

The Hurricane's evolution is described in the following pages, again using many photos and side-view line drawings showing how subtle changes took place according to mark and operational usage. Of interest to many modellers is the Camouflage & Markings chapter that extends to around fifty pages. Dozens of photos and excellent colour profile artworks show a host of different schemes applied to the Hurricane with RAF squadrons around the world and many foreign air forces. Everything from overall black to overall white and many colours in between.

Chapter 6 list Hurricane and Sea Hurricane kits that have been released over the years. This chapter is broken down by scale from 1:72 to 1:24. Several kits are given a careful look over regarding shape, dimensions, detail and markings with an overall appraisal of the quality of the kit. Kits from the new company Arma Hobby come highly recommended for 1:72 modellers and are here judged to be the best in this scale. A good result for this new producer. The list of 1:48 kits cover eight pages, with several Airfix kits appraised and a surprisingly long list of Hasegawa Hurricane kits in this scale. Several fell into the 'here today, gone tomorrow' category and are as rare as hen's teeth. Other manufacturers such as Revell and Italeri have had a crack at the Hurricane in the past. It is interesting to have an unbiased view of the product from this list of different manufacturers. In 1:32 and 1:24, kits from Fly and Trumpeter are also given the once-over.

Next, the Build a Selection chapter extends to twenty pages and shows us full builds of kits in 1:72, 1:48 and 1:32. Airfix and Arma Hobby kits are built and compared in 1:72. Hasegawa's Douglas Bader Mk.I is the subject of the 1:48 build and finally Fly's 1:32 Sea Hurricane concludes this section. Fly's kit is something of a rarity but comes highly recommended at the end of Steve Evans' full build review.

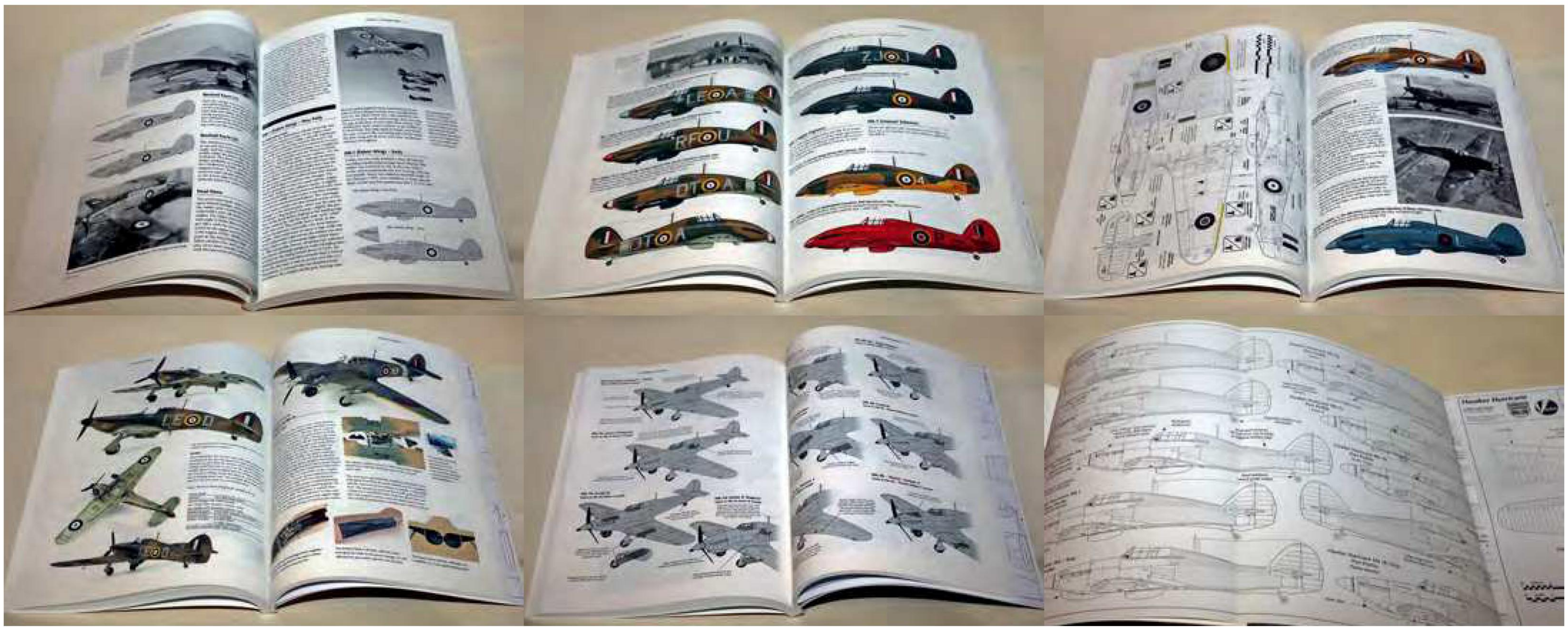
Chapter 8 is Building a Collection with the usual drawings and occasional photos to show the many different versions and modifications to Hurricanes. Hurricanes on skis, Hurricanes with cameras, Hurri-bombers, Hurricanes with big guns and rockets, even a biplane Hurricane, the list is long and interesting.

Chapter 9 covers the Hurricane In Detail with pages covered with photos and diagrams showing all the areas of the aircraft that modellers want to see, from nose to tail. Six pages are devoted to the cockpit alone and a further three to the canopy and windscreen. At the end of the chapter, we see the various armament and tanks carried by Hurricanes.

Readers familiar with this series of books will know that at the end we find the long lists of kits, accessories, decals and books on the Hurricane. Concluding the package, inside the back cover is an eight-page fold-out set of 1:48 Hurricane plans.

We know that the Hurricane is something of a 'poor relation' compared to the Spitfire, a view that is unfair. This book shows the Hurricane in great detail, down to the bones. It is great to see that the number of air worthy Hurricanes increases slowly. It was wonderful to see seven examples lined-up on the grass at Old Warden a couple of years ago. It was thought to be the largest gathering since soon after WWII.

We never fail to be impressed by these Valiant Wings books as they arrive and this one is an excellent addition to their list. Anyone looking to build a Hurricane or just love the aircraft will find all that they need in this excellent, great value for money, highly recommended book. Thanks to Valiant Wings for supplying their new book for review. Copies are available from their web site valiant-wings.co.uk, good model shops and specialist model/aviation book retailers.



IN PRINT

THE ROYAL INTERNATIONAL
AIR TATTOO
50
THE STORY OF THE WORLD'S GREATEST AIRSHOW

Royal International Air Tattoo 50 – The Story of the World's Greatest Airshow

- By Ben Dunnell
- Published by The Royal Air Force Charitable Trust Enterprises
- Guide Price £30.00
- ISBN: 978-1-8382604-0-8
- 304pp hardback, 302 x 258mm

Memories are made of this – 50 Years of the World's Greatest Airshow. This magnificent book from The Royal Air Force Charitable Trust remembers the great air show that is still going strong as the Royal International Air Tattoo 50 years from the first small event held at North Weald in 1971.

Of course, we were robbed of the show in 2020 as like many other events, the pandemic stopped the show. Several others hazards almost had the same result. 2008 was the year that the show was rained-off as far as the public were concerned and the Saturday and Sunday was closed. It poured with rain on Friday turning most of the showground into a swamp.

Each year of the show is covered in a varying number of pages. After two years at North Weald, the show made its first move, to Greenham Common and became a two-day event, setting the pattern for years to come. For a while the International Air Tattoo was a bi-annual event. In the 'fallow' year, the team would organise events at other locations such as Hurn Airport and the Army Air Corps Headquarters at Middle Wallop. Who could forget the 100+ helicopters arrival on show days at Middle Wallop? Holding such a show on a grass field had its limitations but the sight of a Harrier GR.3 kicking up the grass cuttings, as it taxied along the crowd line, with the said grass flying into the VIP enclosures provided entertainment for the rest of the audience. Despite Greenham Common being an ideal venue for several reasons, the basing of USAF Cruise Missiles there made a move to a new home inevitable and in 1985 the first IAT would be held at RAF Fairford on the Gloucester/Wiltshire border where it continues to take place.

1976 was the first year that I attended and I am sure that I have not missed at show so far. It only took one visit to convince me that it would be top of my choice of shows to attend every year. At that first show, the Americans were celebrating their Bicentennial Anniversary with several aircraft sporting Spirit of 1776 special markings. The US Navy also attended in numbers and most memorable of all was the line of 26 Hawker Hunters. The report on that year is typical with six pages of text and photos of the aircraft and members of the visiting and organising teams. IAT's Greenham Commons shows went out on a high with its 1983 show with a line of 27 F-4 Phantoms with a SR-71 parked at one end, to say nothing of many Spitfires attending as a tribute to Douglas Bader.

This book is an excellent history of the Royal International Air Tattoo. The event has celebrated many anniversaries over the year with many firsts and lasts. Like thousands of others, I have enjoyed many hours being entertained at this great event, some very wet and some very hot. This book brings back many memories and despite being there in person, I learn of many things that took place of which I was unaware at the time. Author, Ben Dunnell and the team behind this book have my admiration and congratulations – superb photographs, text, design, print and production.

At the time of writing, this book is only available through the RIAT web site. At £30, it is outstanding value for money and any profits from its sale supports RAF charities. See airtattoo.com for details.

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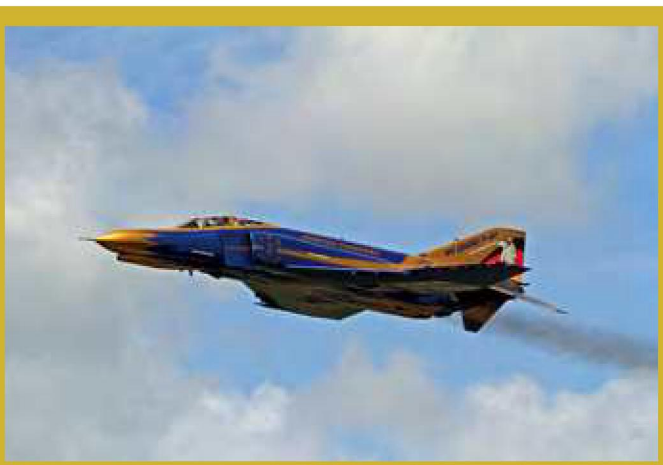
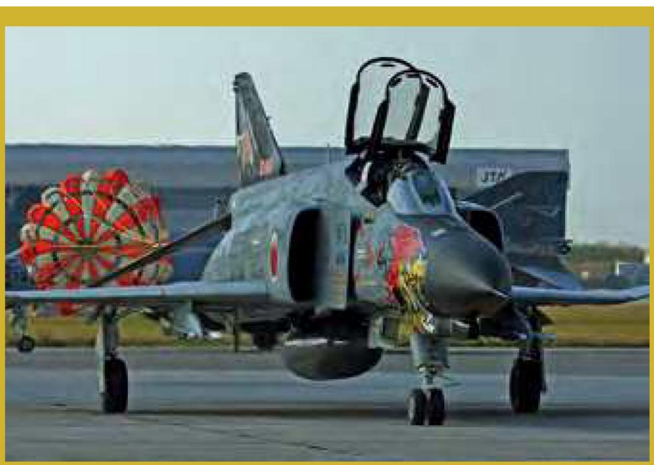
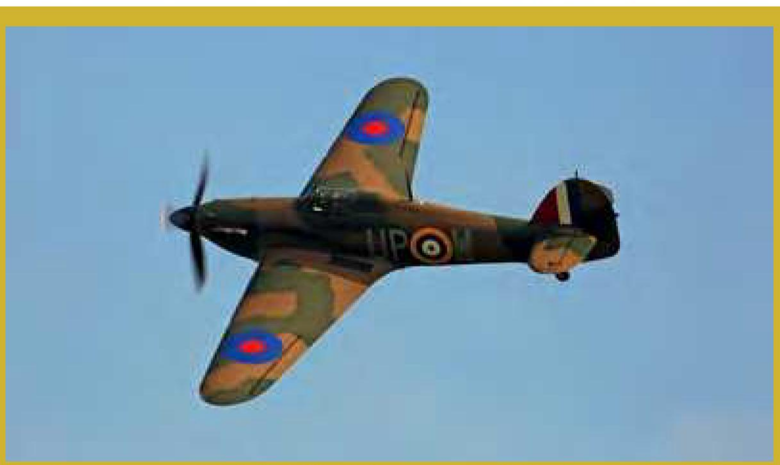

The German Air Force applied this superb blue and gold scheme to a F-4F for the Phantom Pharewell show at Wittmund in June 2013 ending 40 years of the Luftwaffe flying Phantoms.


A JASDF 302 Squadron F-4EJ Kai Phantom with its dragon nose artwork taking part in its home base air show at Naha on Okinawa in December 2007.


Hawker Hurricane Mk.I, UP-W R4118 seen at Old Warden in 2015. This is the only remaining airworthy Hurricane that took part in the Battle of Britain, flying with No. 605 Squadron, claiming four German aircraft.

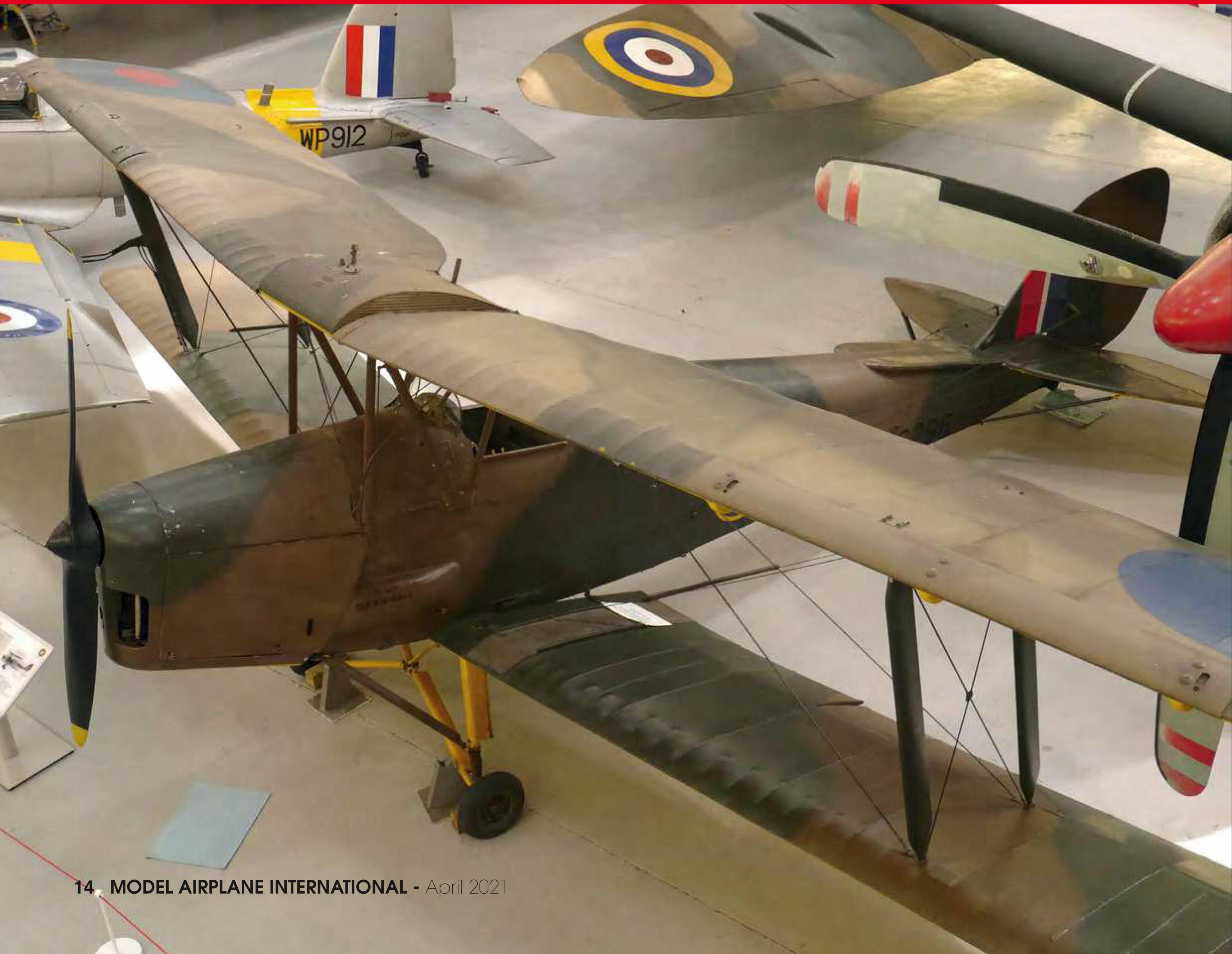
TIGER MOTH CLOSE-UP

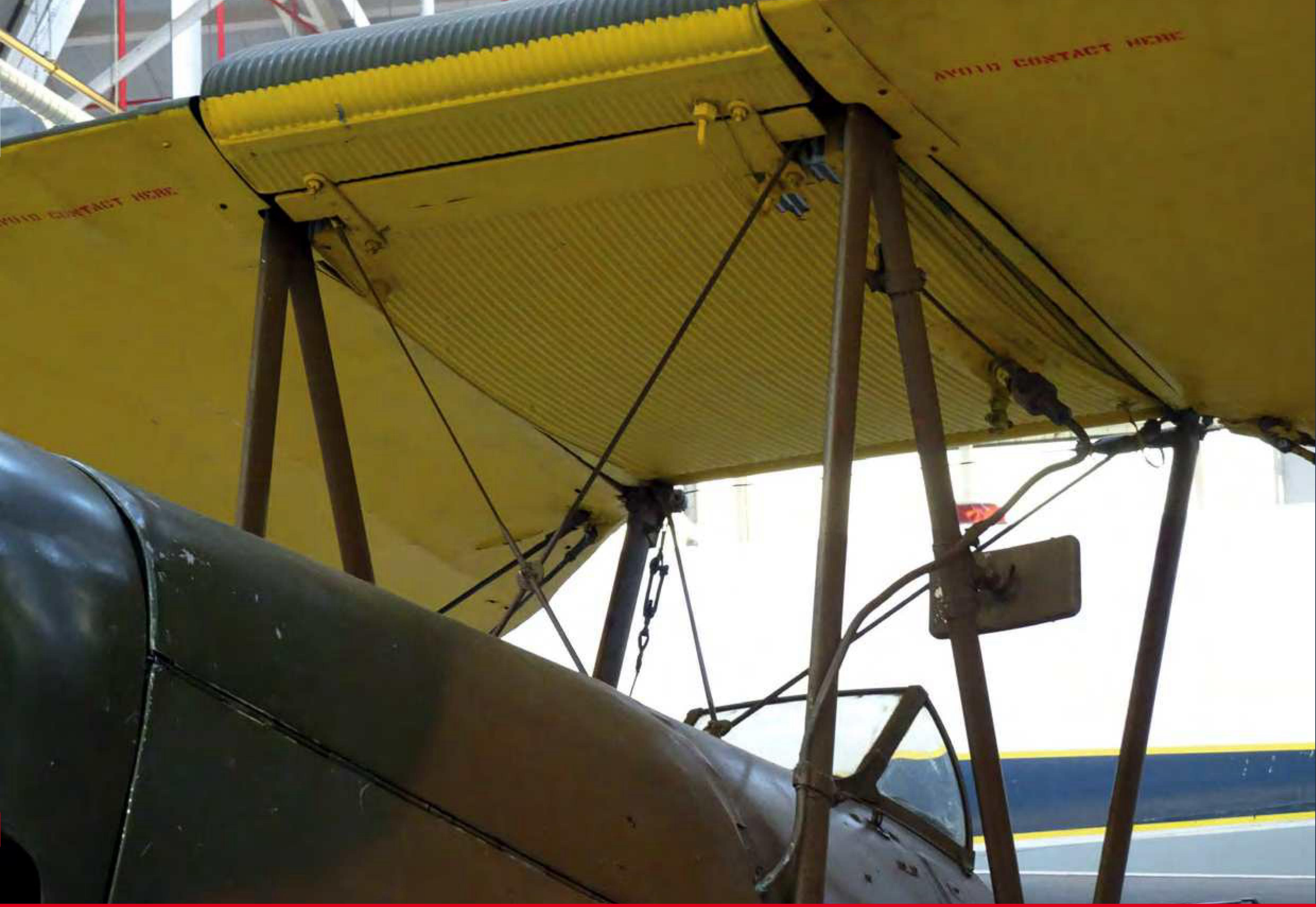
Haris Ali takes a walk around the Tiger Moths on display at RAF Cosford Museum and the Imperial War Museum Duxford.

The de Havilland DH.82 Tiger Moth is a 1930s British biplane designed by Geoffrey de Havilland and built by the de Havilland Aircraft Company. It was operated by the Royal Air Force (RAF) and many other operators as a primary trainer aircraft. In addition to the type's principal use for ab-initio training, the Second World War saw RAF Tiger Moths operating in other capacities, including maritime surveillance and defensive anti-invasion preparations; some aircraft were even outfitted to function as armed light bombers.

The Tiger Moth remained in service with the RAF until it was succeeded and replaced by the de Havilland Chipmunk during the early 1950s. Many of the military surplus aircraft subsequently entered into civil operation. Many nations have used the Tiger Moth in both military and civil applications, and it remains in widespread use as a recreational aircraft in several countries. It is still occasionally used as a primary training aircraft, particularly for those pilots wanting to gain experience before moving on to other tailwheel aircraft. Many Tiger Moths are now employed by various companies offering trial lesson experiences. The de Havilland Moth club, founded in 1975, is now an owners' association offering a mutual club and technical support.*

The RAF Cosford Museum and the Imperial War Museum Duxford both have Tiger Moths on display. Haris Ali takes a close look. ■

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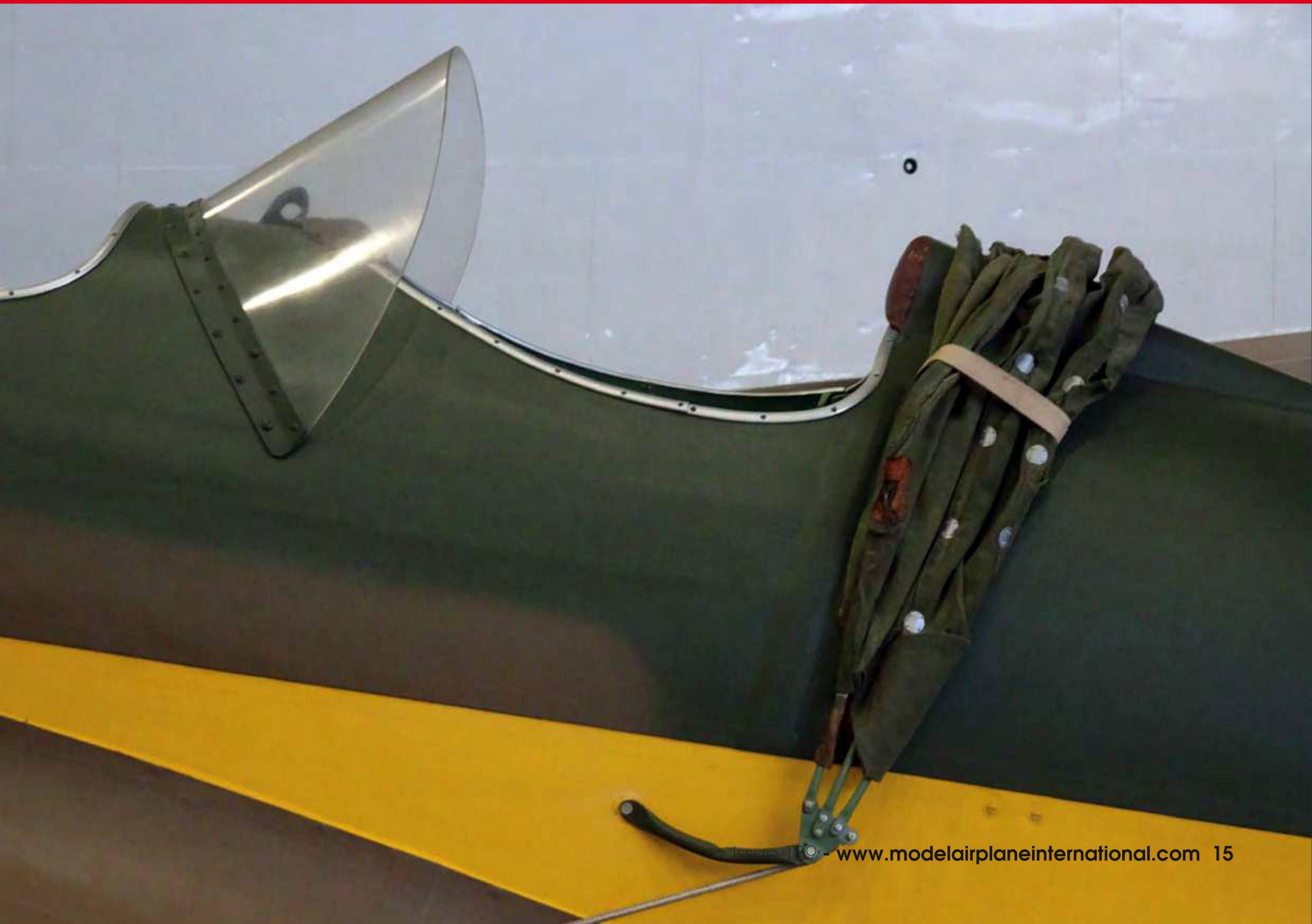
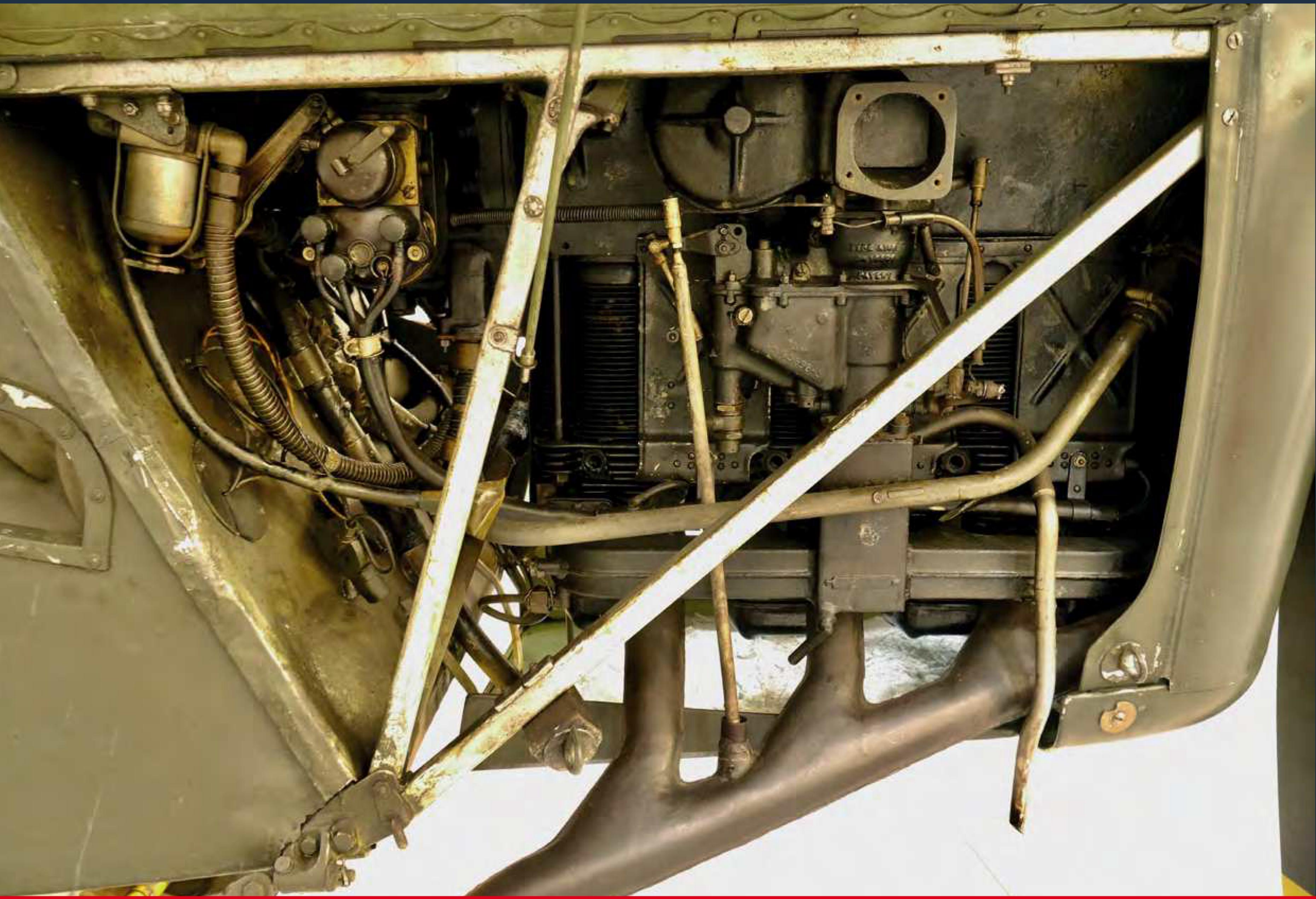
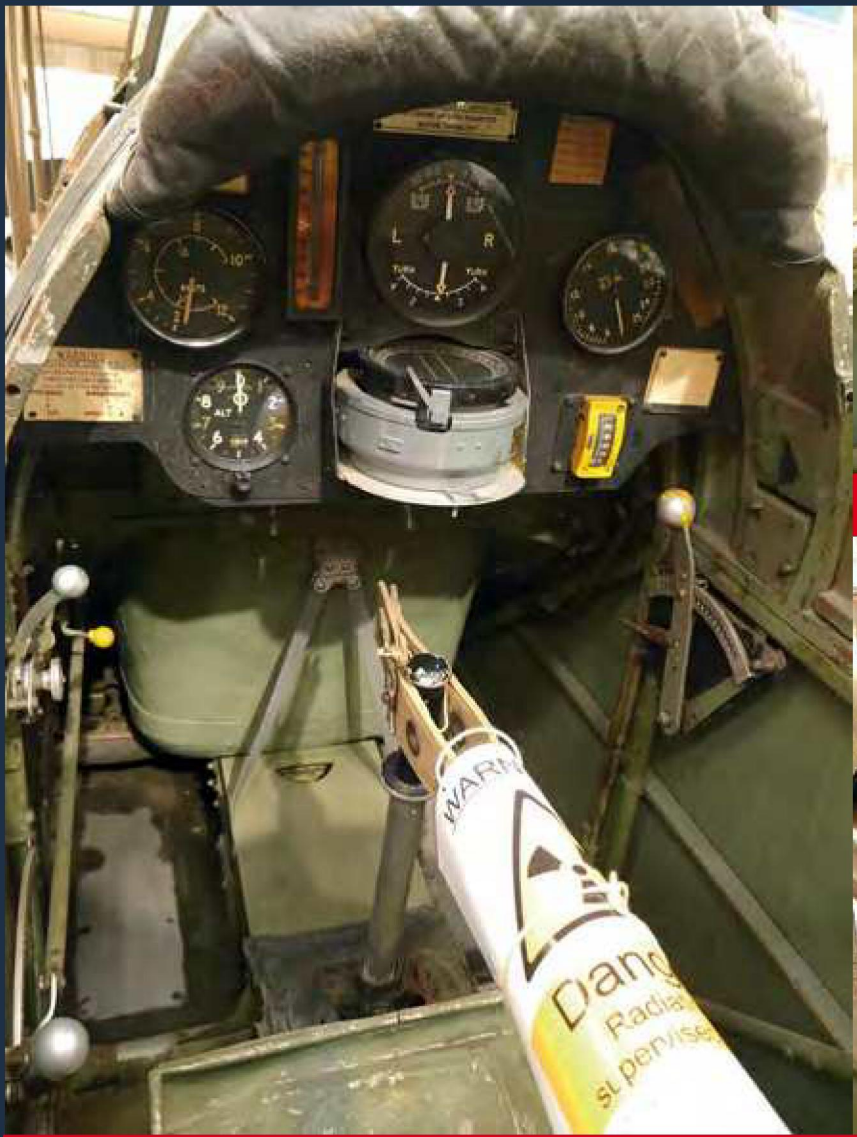
ABOVE: Cabane struts supporting the wing from the fuselage.

BELOW: The rear cockpit position with folded canvas hood.

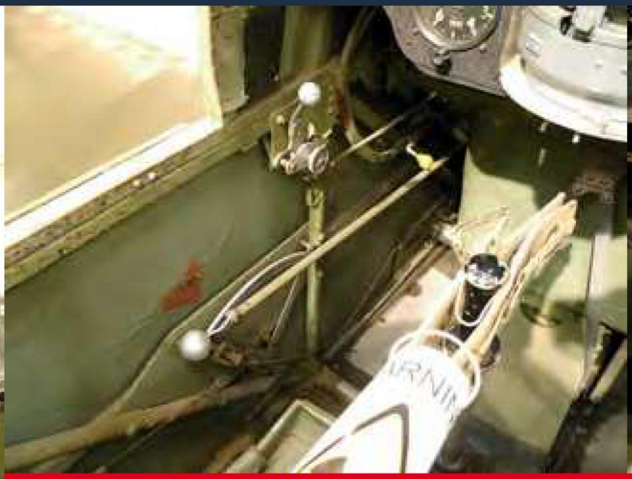




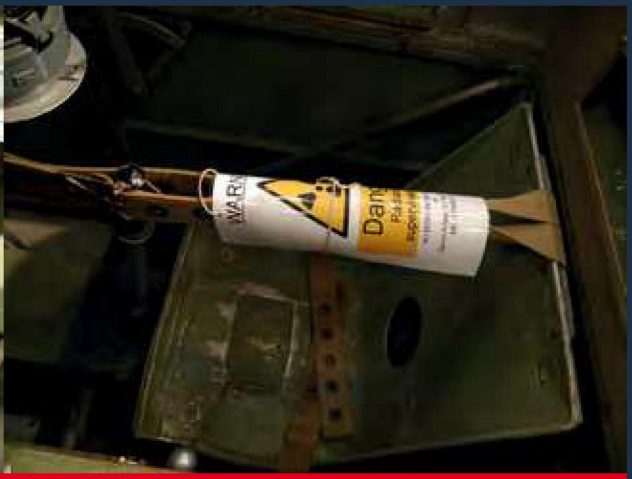
Detail view of the Gypsy III engine, starboard side.



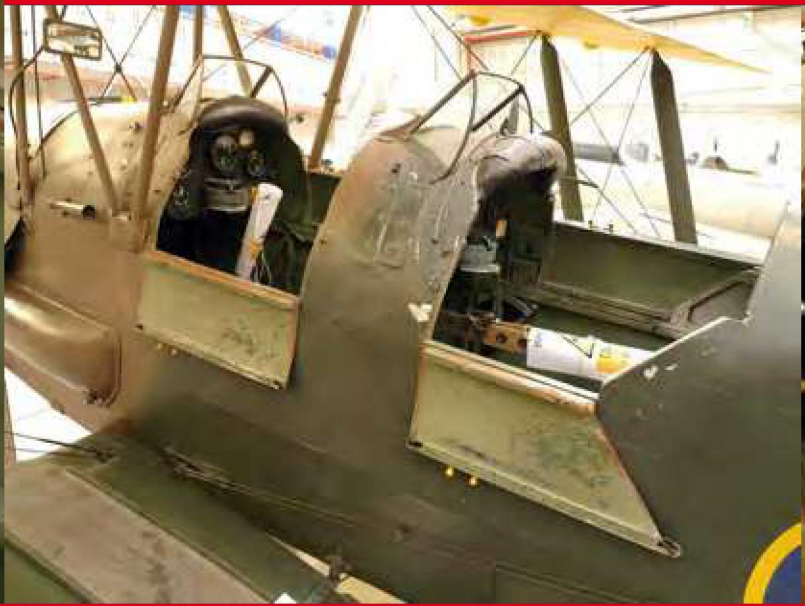
The rear cockpit with control column gust lock in place.



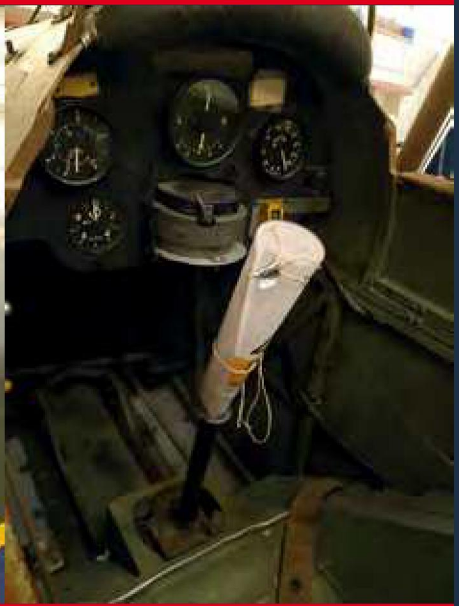
Simple controls on the port sidewall.



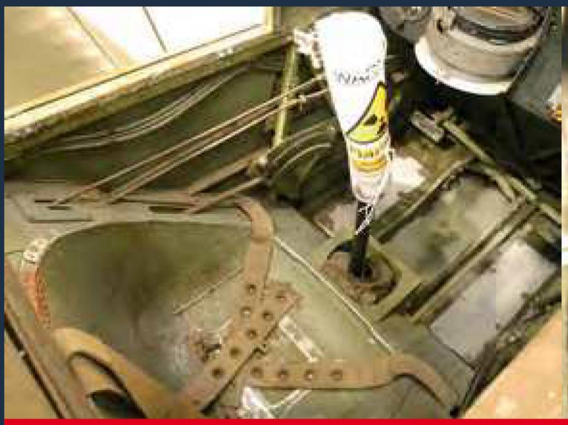
The conventional seat for the rear pilot.



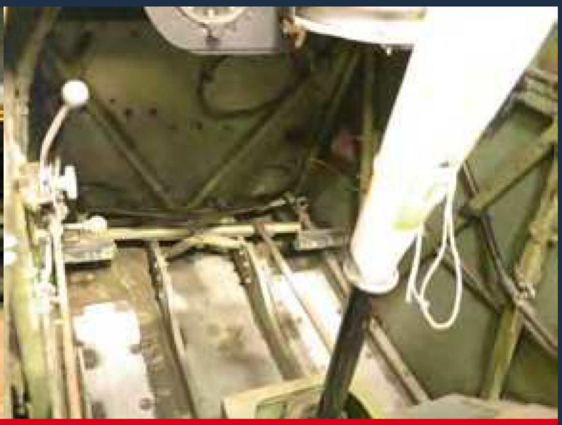
Front and rear cockpit doors open.



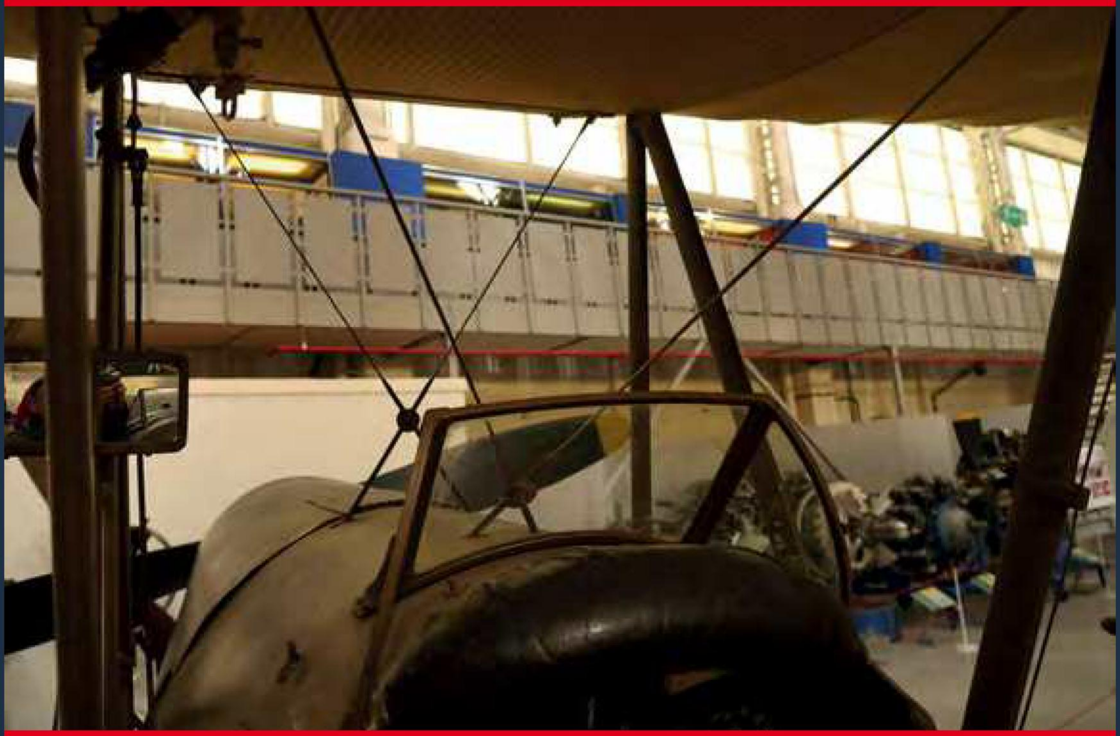
The front cockpit instrument panel.



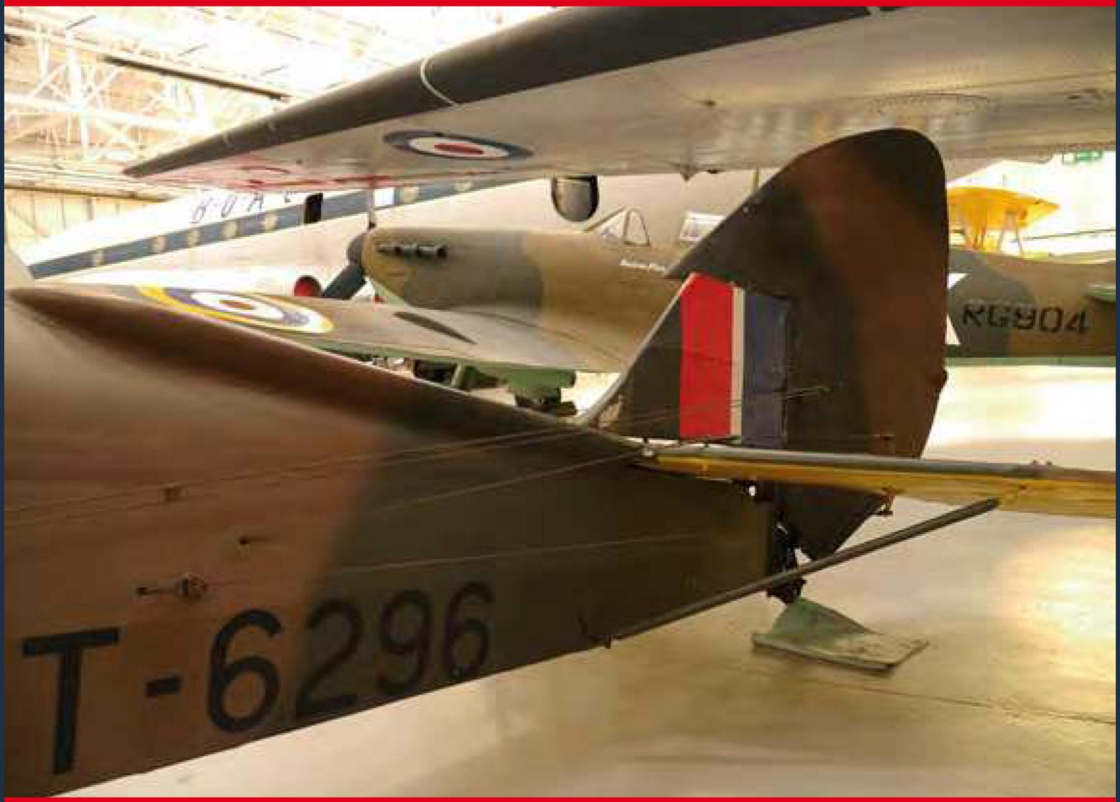
Note the rudimentary pressed metal seat for the rear cockpit.



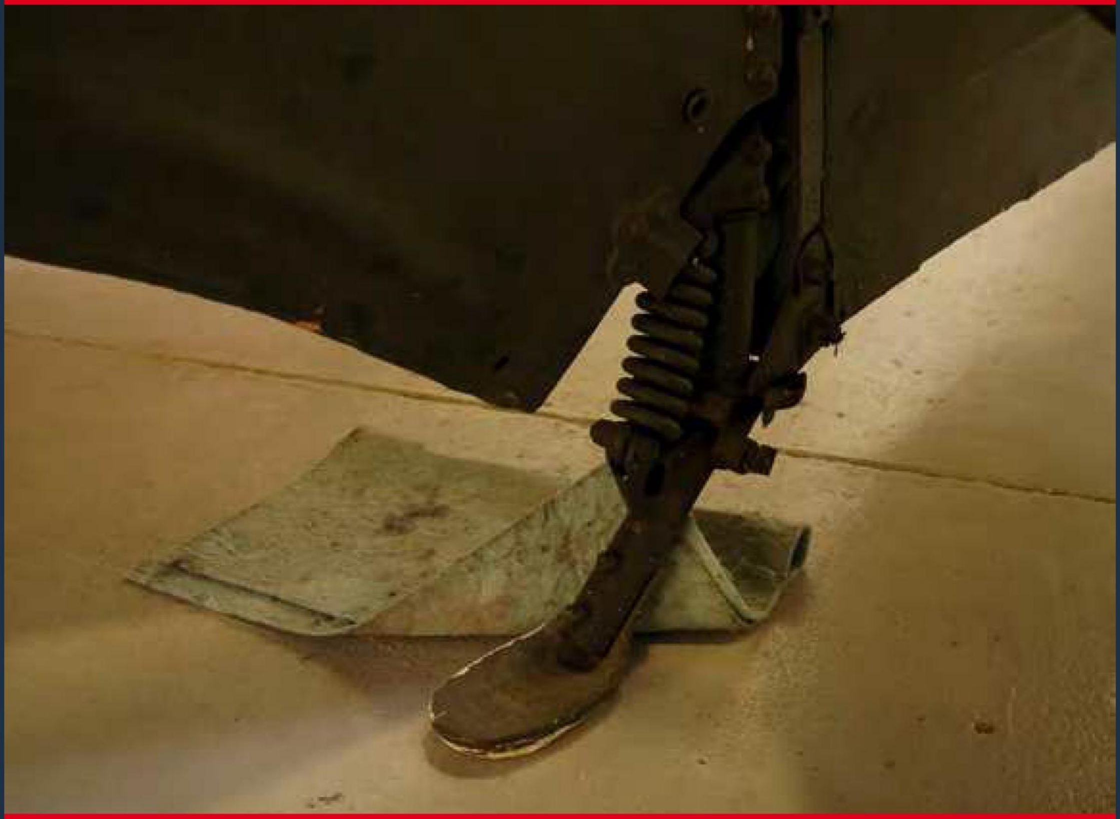
The front pilot's rudder pedal. Once again, this is a very straightforward mechanism that simply pivots on a centre mount.



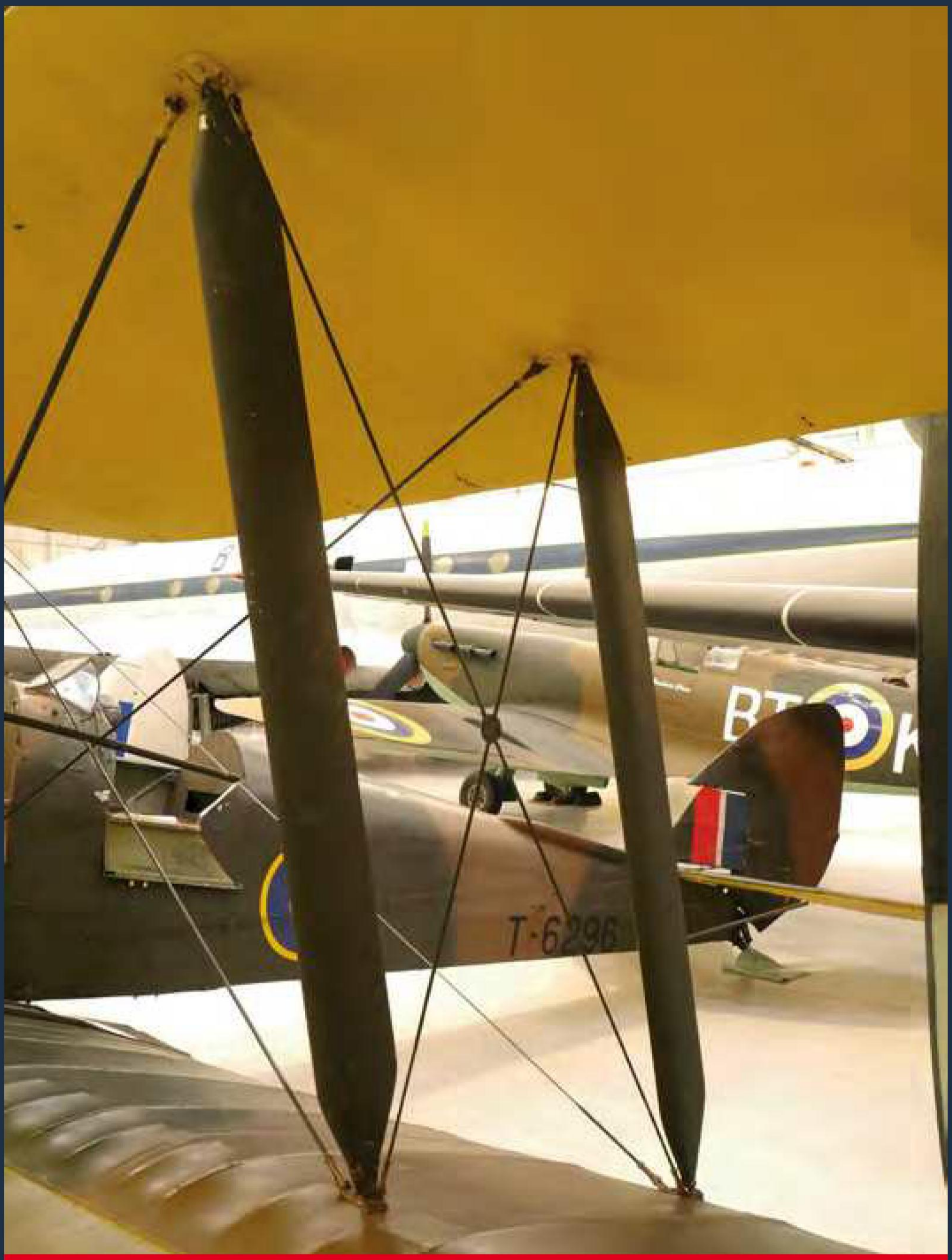
The pilot's view through the tiny windscreen and the cabane strut bracing wires.



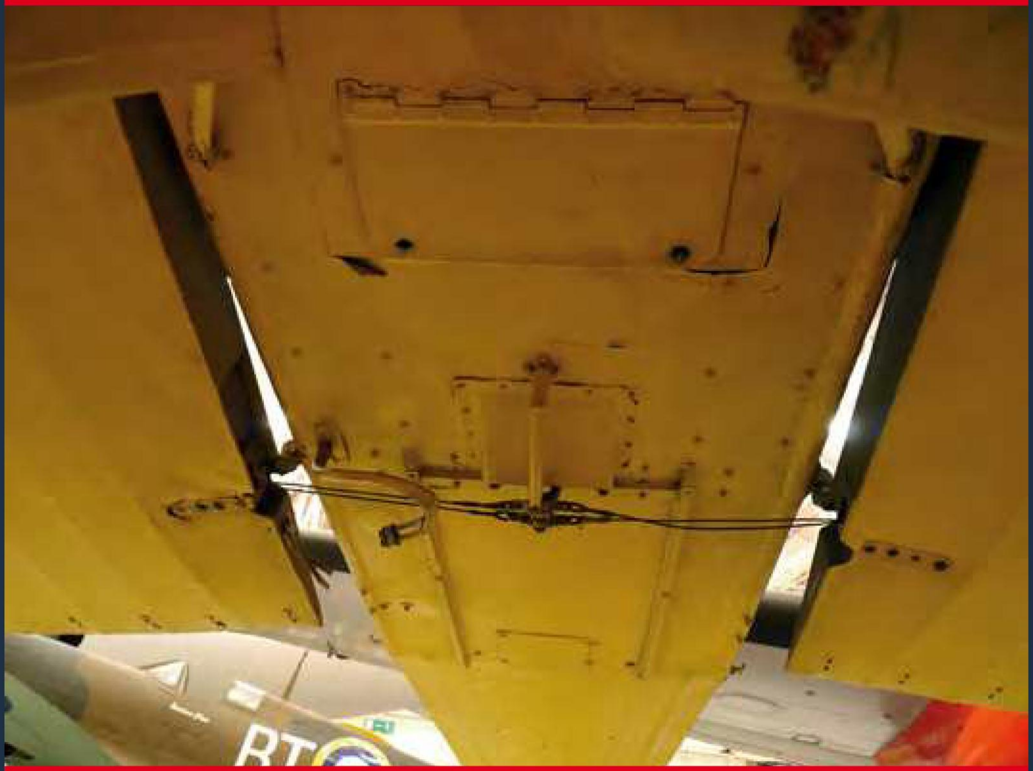
Note the plethora of control cables emerging from the fuselage and connecting to the rudder and elevators.



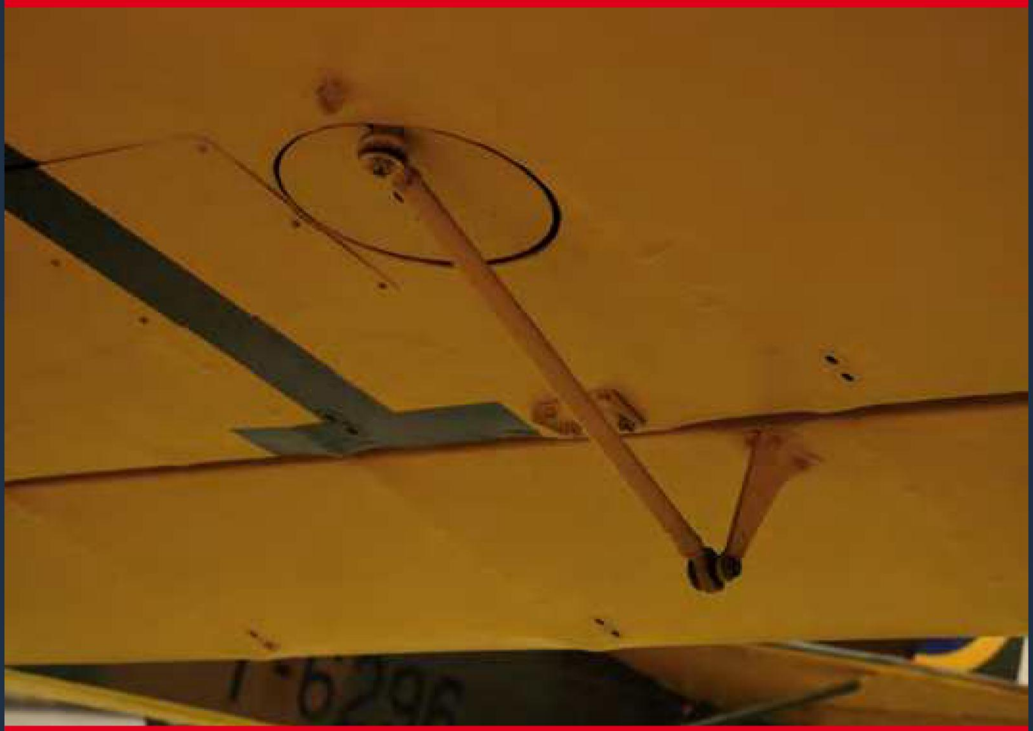
"We don't need to steenkin' tail wheel!" The Tiger Moth's tail skid.



Port side interplane struts and bracing wire.



Lower fuselage details. They're going to need a lot of putty to fill those gaps at the wing roots! Control lines are running to the ailerons.

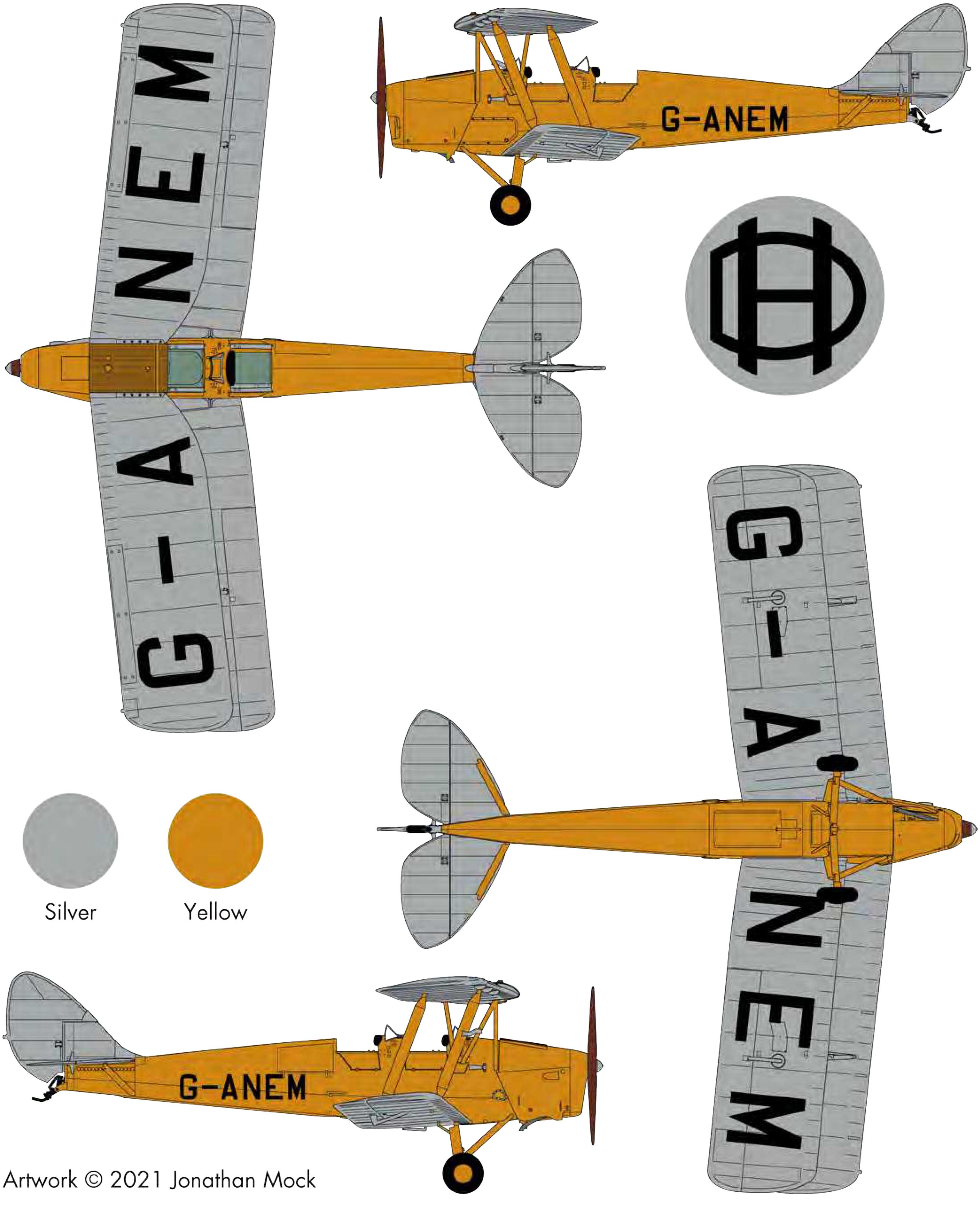


Port side elevator actuator.

1:32

De Havilland DH-82 Tiger Moth

G-ANEM (formerly R5042, Royal Air Force)


G-ANEM
G-ANEM
G-ANEM
G-ANEM
Silver
Yellow

Artwork © 2021 Jonathan Mock

IN PRINT

This appears to be Spitfire book month with two new titles landing on our desk for review. As you will see below, one of them is not quite so new, in the form of Valiant Wings' revised and expanded guide to the Merlin-engined Spitfire versions. Let's take a closer look at what is on offer.

MK 356, a Spitfire LF IXe belonging to the Battle of Britain Memorial Flight in overall High Speed Silver paintwork. This is one of the last Merlin engine Spitfire types delivered in March 1944 and a D-Day veteran. It is seen here basking in the June 2010 sunshine at Kemble airfield.

WINGLEADER PHOTO ARCHIVE NUMBER 6
RF D
NEIL ROBINSON & MARK POSTLETHWAITE
SUPERMARINE SPITFIRE Mk V
IN EUROPE AND NORTH AFRICA

Supermarine Spitfire Mk V in Europe and North Africa

- Wingleader Photo Archive Number 6
- By Neil Robinson & Mark Postlethwaite
- Published by Red Kite/Wingleader
- Guide Price £19.95
- ISBN: 978-1-906592-75-2
- 80pp softback, 210 x 297mm

As you see from the title, this is the sixth in the expanding series of excellent Wingleader Photo Archives, great modelling references. This Spitfire V profile follows hot on the heels of the Lancaster book published a short time ago. Before opening the book, the first 'tick' is awarded to the A4 landscape format enabling the pictures to be reproduced as large as possible. It makes a big difference, being able to have photos nearly 300mm wide rather than just over 200mm in an A4 portrait book. Artist's profiles can be printed to a good size, leaving space below for smaller plan views and captions.

The opening pages describe the gestation of the early Spitfire versions. Only one of the Mk.III was built around the more powerful Merlin XX, a more complex engine than that used in the Mk. I and Mk. II. It was decided to divert these engines to Hurricane production so that is as far as the Mk. III progressed. A Mk. IV Spitfire was never produced so the next in line was the Mk. V family, built around the Rolls Royce Merlin 45. This was basically a Mk. II airframe, modified to accommodate the new engine with some other minor changes. As the Mk. V versions appear, we see photos of the aircraft with superimposed red arrows pointing out the change from one version to the next. This is very useful if you are building a particular version of Mk. V. The captions describe the changes that have taken place.

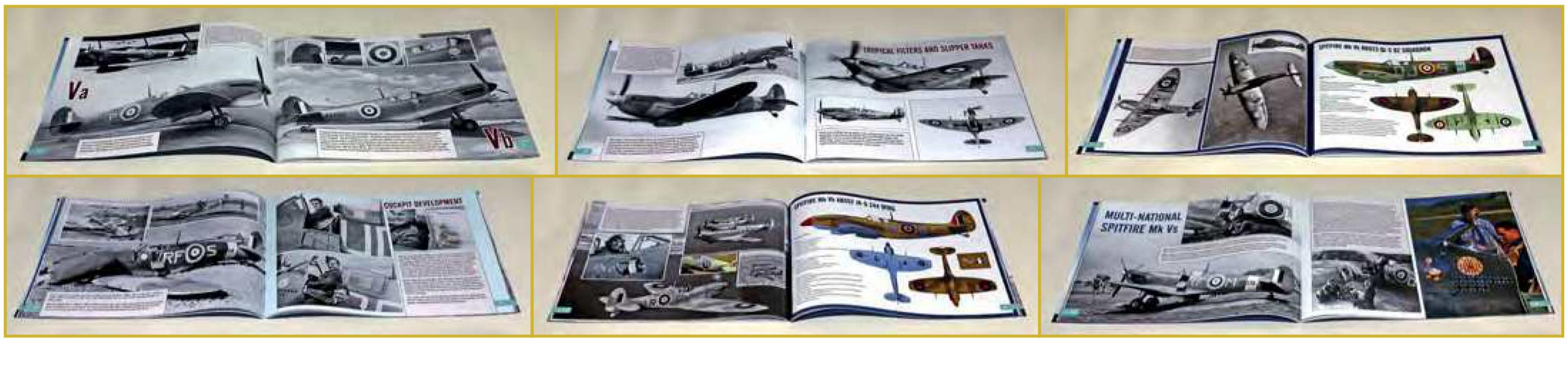
As Mk. Vs were to be used away from the UK some major changes would appear in the form of long-range fuel tanks and special air filters to deal with dusty and hot desert conditions. None of these are particularly pretty but very functional.

The photos throughout the book are mainly produced in black and white, many look like they were taken yesterday thanks to modern photo processing and printing techniques. A few are printing in colour and the question of Spitfire colours is covered at the time when Spitfire top surface colours turned from Dark Green and Dark Earth to Dark Green and Ocean Grey in August 1941. A colour photo showing how locally applied paint could vary from one airframe to another. That may be a relief to those who lose sleep over the shade of a colour coming out of a new pot of paint. Factory finished paintwork would be constant but when changes were applied locally, varying paint colour mixes could apply.

Another feature shown in the photos is the widely differing amount of wear and tear to paintwork. All good if you are justifying the finish on your latest model from pristine to very second-hand looking. Some close-ups of pilots show how the paintwork around cockpit framework is worn back to bare metal. Many photos show Spitfires being maintained, ideal if you wish to add ground crew and handling equipment to your model and produce a diorama. While Spitfires were superb in the air, they could be a bit of a handful on the ground as can be seen in several photos. Again, these photos of accidents may inspire some to model these mishaps.

As well as RAF Mk. Vs, we see some operated in Russian and American markings, one with particularly challenging to reproduce weathering. All very inspirational.

This is an excellent profile covering the Spitfire Mk. V versions. Whether you are fascinated by the Spitfire, aviation history of this period or looking for guidance on schemes to apply to a kit, you are going to find this book very useful and interesting. These Photo Archives are printed with modellers in mind and come highly recommended. See wingleader.co.uk for ordering or specialist traders such as Avid Reader/Bookworld Wholesale for availability (bookworldws.co.uk).


Va
Vb
TROPICAL FILTERS AND SLIPPER TANKS
COCKPIT DEVELOPMENT
MULTI-NATIONAL SPITFIRE Mk Vs

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VAT number, which is GB 789 7020 84

The Supermarine Spitfire Part 1 (Merlin-powered) including the Seafire Airframe & Miniature No. 12 – Updated and Expanded Second Edition

- By Richard A. Franks
- Published by Valiant Wings Publishing Ltd
- Guide Price £24.95
- ISBN 978-1-912932-14-6
- 272pp softback, 297 x 210mm

We were very impressed with this book when we reviewed the first edition in 2018. All you wanted to know about the early Spitfires (with Rolls Royce Merlin engines) but were afraid to ask. This second, updated and expanded edition is here for review. For a start, we see that this edition is extended by a full 32pp. Obviously much of the book remains the same so we will point out the changes and look at the book as a package for those who have not seen it so far.

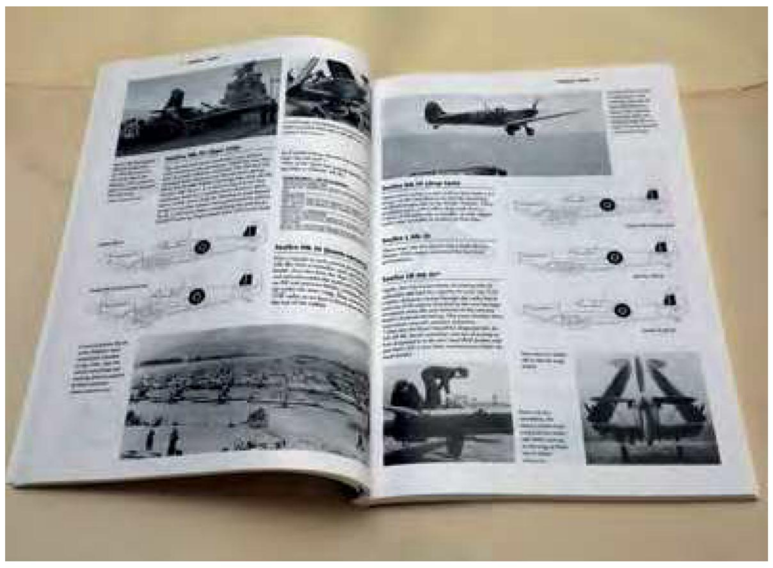
Twenty-two of the extra pages are accounted for in the Preface where the author adds pages of information and photos of Spitfires in foreign service. Many air forces flew Spitfires both during WWII and afterwards into the early 1950s. The list of nations with Spitfire connections is surprisingly long. For those looking to build a Spitfire with a difference, we see many photos of Spitfires in different national markings.

One part of this book that will be almost out of date before the ink has dried is that on the kits and accessories. Hardly a week passes but there is not another kit, decal sheet or add-on bits released for Spitfire kits. The pages containing lists of kit reviews has been amended to add the kits released in the last couple of years. When we come to the Building a Selection chapter, Steve Evans does a full build review of Eduard's recent 'Spitfire Story: The Few' containing a pair of 1:48 Mk. I kits. The new kit is built and painted with informative text and photos showing how it goes together and the options within the box.

At the back of the book, the Appendices now catch up with releases of kits, decal sheets and accessories that have become available between the first edition and this new one. For example, the Spitfire & Seafire Kit List has grown from two pages to three and Accessories from two pages to nine.

The first pages of this book describe the early days of the famous Supermarine aircraft when the company was engaged in a quest to build high-speed record-breaking sea planes during the inter-war years. During this time the Supermarine was gathering knowledge that would be applied to the design of the Spitfire. Supermarine were to respond to Air Ministry requirements for the next generation of fighters to serve with the RAF. Hurricanes and Spitfires designs and performance would be a huge leap forward from the biplane days of the Hawker Harts and Gloster Gladiators of the 1920s and 30s. The first RAF squadron to receive Spitfires was No. 19 at Duxford in August 1938. This first section describes the gaps in Spitfire marks such as the Mk. III and the reasons why only one would be produced. Similarly, the Mk. IV would progress no further than the drawing board.

Following the Development section of the book we move to chapters that describe in detail how the Spitfire marks progressed to keep pace with the performance of German fighters following the outbreak of WWII in 1939. Firstly, we go from the Mark I to the Mark V, then on to the Mark VI to IX/XVI.



The two following chapters describe photo reconnaissance Spitfires and then finally, Seafires. Notes and diagrams describe the progression from one version to the next. In many cases, we see photos too. Some changes are very minor. One being the conversion of under-wing pylons from carrying small bombs to carrying beer barrels!

The following chapter will be of interest to anyone building a Spitfire model, Camouflage and Markings. The text describes the whys and wherefores of camouflage schemes throughout the versions covered by this book. As well as the copy, there are a generous number of colour profiles and photos (mainly black and white) showing colour scheme changes. In 1941 Spitfire camouflage colours changed from a pattern of Dark Green and Dark Earth on the upper surfaces to Ocean Grey and Dark Green with Medium Sea Grey undersides replacing several colours including Sky. During the upper camouflage transition period, several variations were applied, some of them at airfield level. Where variations applied to Spitfires destined for operations overseas, these are described in detail. Other variations such as one-off schemes for special operations such as high-altitude photo reconnaissance missions are shown too. Very useful too are drawings showing the positioning of roundels and stencilling items. This section includes drawings of export Spitfires with examples from a long list of countries that would use Spitfires during WWII and during the following years, into the 1950s.

The beginning of what is almost the second half of the book moves from the history of Spitfire marks to modelling matters with a look at Spitfire kits. We move through the common scales from 1:72 to 1:48, 1:32 and 1:24. Richard Franks selects examples from each of the scales and gives us a description of what is in each box and then goes through the pros and cons of each kit in some detail, very well worth reading if you are looking to buy a kit. However, you might find that, on reading the comments you have a bit of a 'turkey' in your collection.

The next section includes several full-build reviews of a selection of kits in the popular scales. These show where some simple modifications can add to the kit out of the box or additions such as etched parts that can make all the difference to the finished model. Really good photos of the parts coming together will help those tackling any of the kits shown. Kits in 1:72, 1:48 and 1:32 scales are shown with arguably the best Spitfire kit in any scale, Tamiya's 1:32 examples bring up the rear.

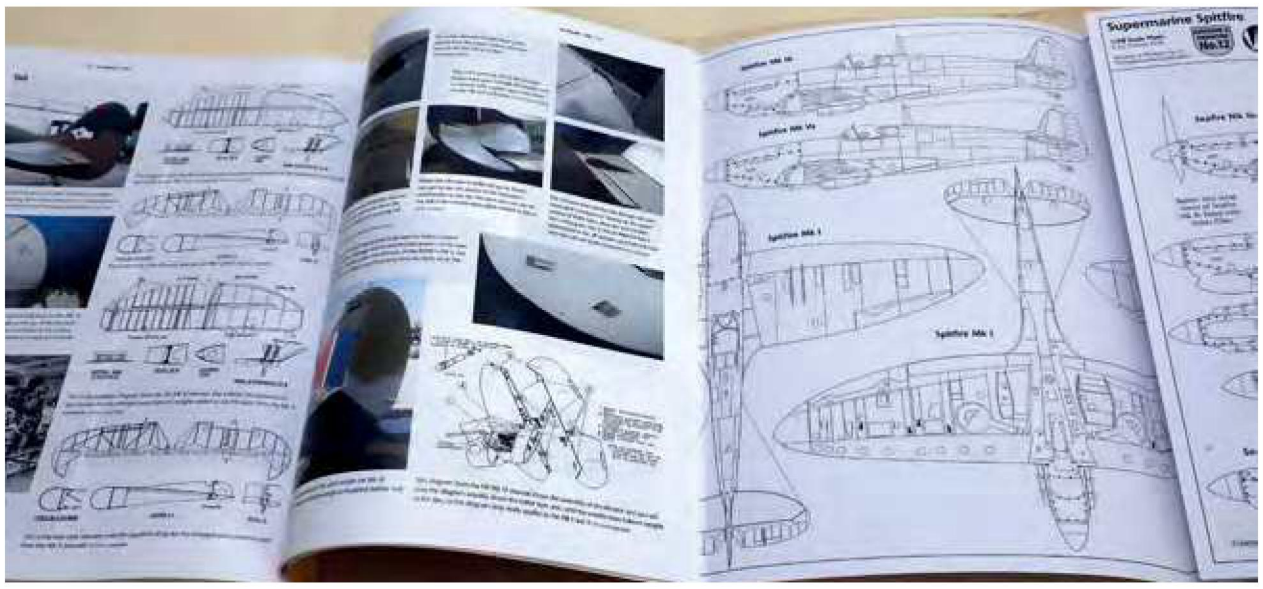
We find the Building a Collections chapter in these books very useful. The pages are covered with diagrams that show the detailed changes from Spitfire version to version. Some changes are obvious such as a change of canopy shape, some are not so obvious such as a different type of tyre on a tail wheel or the addition of a small aerial.

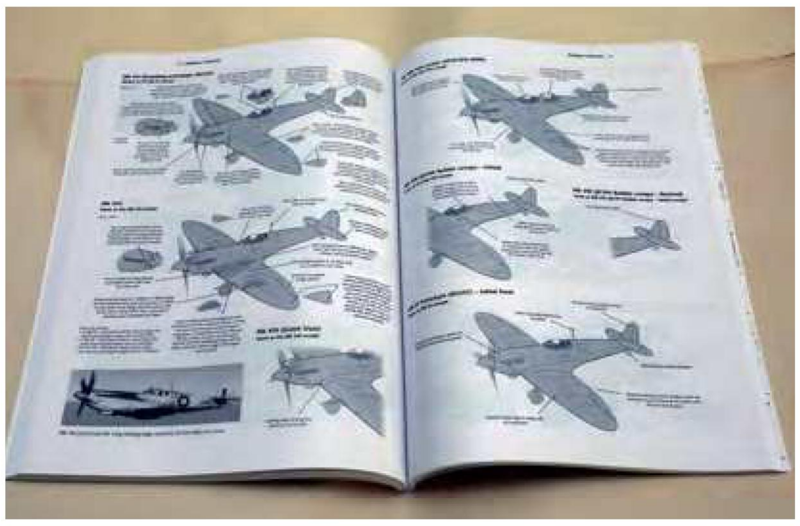
Again, of great help when building your Spitfire kit is the In Detail section. These pages are illustrated with many photos and engineering diagrams so that should you need to know the layout of the Spitfire's oxygen system's plumbing, it is here. For the rest of us, we find all of those areas of the airframe covered in detail and always useful, cockpit interior photos and diagrams. Thirteen pages are devoted to the canopy and cockpit interior alone. It is difficult to imagine that anyone building a kit will not find an answer within these pages. As usual, the book concludes with lists of kits, additional parts, decals, further reading material and an excellent set of 1:48 plan drawings on an 8pp fold-out inside the back cover.

This book is another stunning piece of work from Richard Franks and the Valiant Wings team. If you have a Spitfire kit or two or three in your to-do pile, I thoroughly recommend adding this book to your library in readiness. If you are not a Spitfire modeller and just think this is one of the most beautiful pieces of machinery every built, you will find many hours of enjoyment between the covers and all for less than the price of most Spitfire kits. Well done to all involved in this great book.

Thanks again to Valiant for supplying their latest title for review. See the Valiant Wings web site: valiant-wings.co.uk for ordering and availability or visit your favourite specialist book traders such as Avid Reader/Bookworld Wholesale (bookworldws.co.uk). Hannants also stock Valiant Wings titles.

Alan Firbank
February 2021





TRANSFER LIST

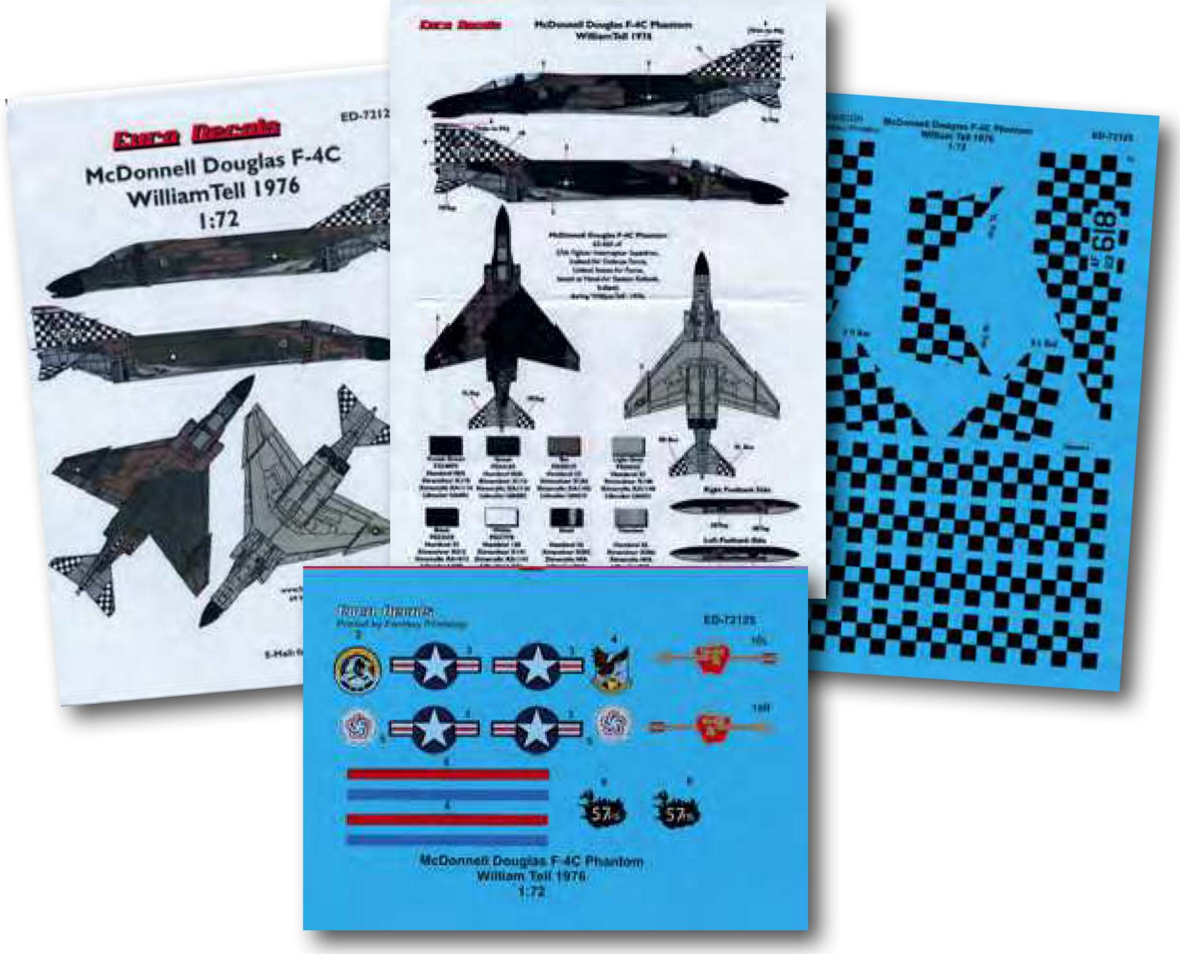
Written by Alan Firbank.

EURO DECALS FROM FANTASY PRINTSHOP

www.fantasyprintshop.co.uk

We are always pleased to open envelopes containing decal samples to introduce to you, our readers. This month we see decal sheets for a 1:72 F-4C Phantom and one with four colourful F-100D USAF Super Sabres. Also, some of those 'really useful one day' spares sheets.

MCDONNELL DOUGLAS F-4C WILLIAM TELL 1976 (SHEET NO. ED-72125)



Back in the day when we would see a line of 20+ Phantoms at the International Air Tattoo at Greenham Common the UASF's 57th FIS, based in Iceland, would send some lovely F-4s. At the time, the 'Black Knights' were based at Keflavik and were regular attenders at Greenham Common and a handful of other USAF Open House events in the UK. Their distinctive checker-board pattern would appear on their tail fins of the Phantoms and then F-15C Eagles.

This new sheet from Euro Decals brings us the most spectacular 57th FIS Phantoms of them all. The special scheme applied for the unit's participation in the William Tell exercise has appeared on several kit box tops in the past. Several 57th FIS F-4Cs carried the checker-board pattern on their tail surfaces but the ones taking part in William Tell also had the arrow piercing an apple emblem on their fuel tanks. The base camouflage colour scheme of the Phantoms at the time was the standard USAF Vietnam camouflage pattern of two Greens and Tan over Light Grey undersides. The F-4C on the decal sheet is AF 63618, oddly the one on the instructions is AF 63666 but it makes no matter. This set consists of two small decal sheets, reduced from the earlier 1:32 release. The larger of the two is a black printed sheet with the tail surface checkers with about a third of the sheet covered with spares that will come in handy for something one day. The second sheet is printed full colour with stars and bars, badges and the William Tell logos for the fuel tanks. You will need to paint the tail fin and painted parts of the tailerons White while the rest of the aircraft is finished in the standard colours. Those not keen on weathering will be pleased to know that the aircraft participating were immaculate. Presentation scores were often counted towards winning scores to calculate the overall places at the end of the exercise. This in another great choice of subject for those 1:72 Phantom fans.

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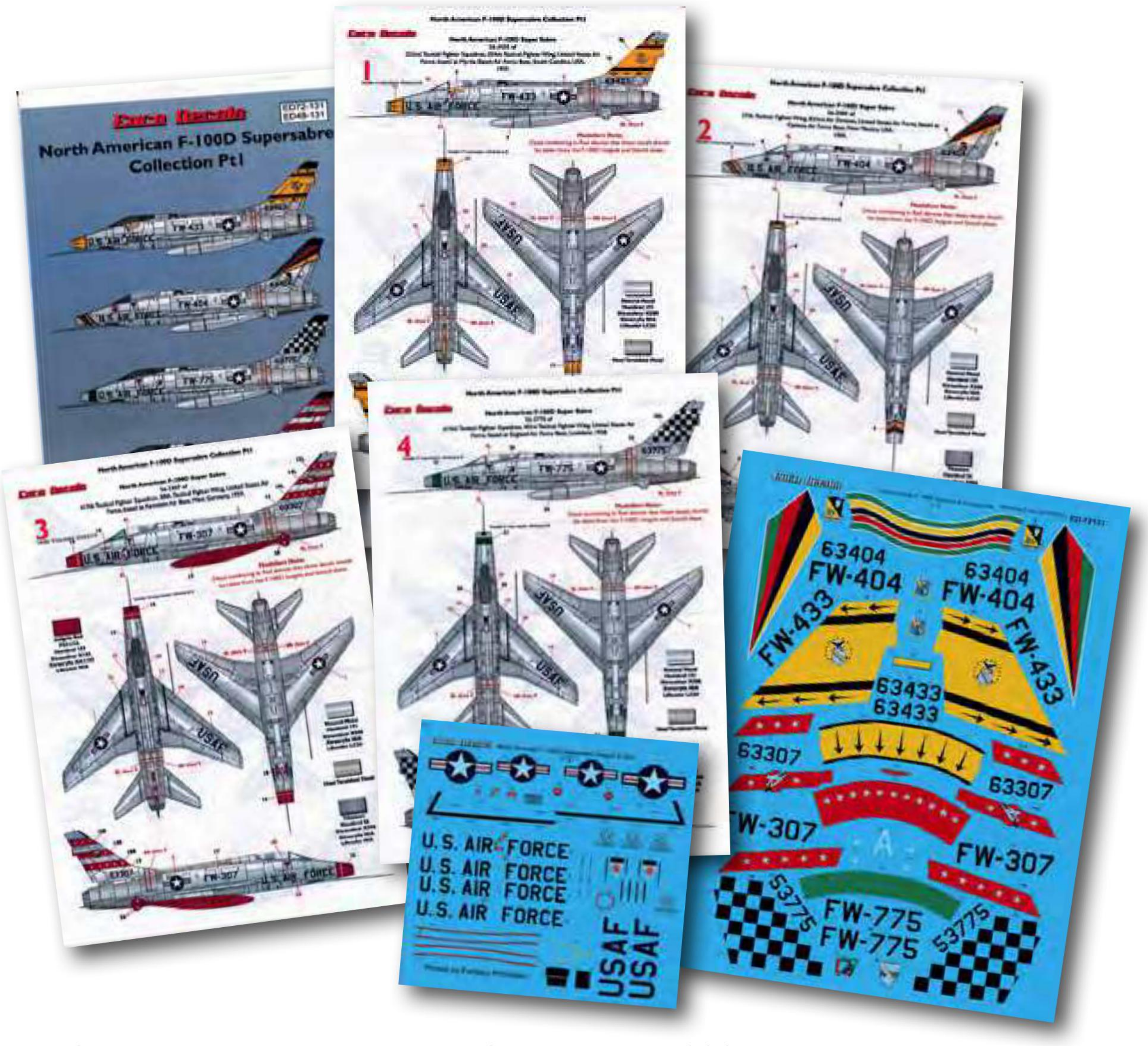
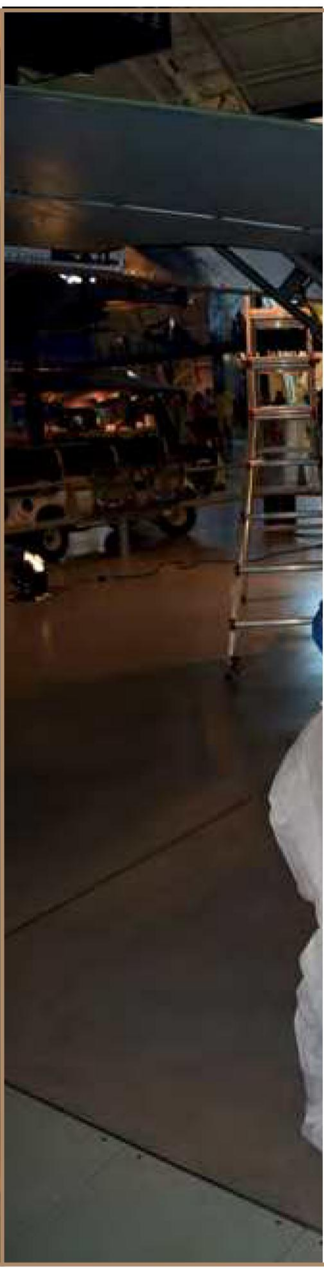


NORTH AMERICAN F-100D SUPERSABRE COLLECTION PT I (SHEET NO. ED-72131)

Here is a great set of markings for four USAF Super Sabre F-100Ds in overall natural metal finishes. The decals arrive on two sheets, one with the individual aircraft markings and a generic sheet with stars and bars and stencilling. The instructions are very good with each subject shown in four views on an A4 sheet.

1. F-100D 56-3433 with the 352nd Tactical Fighter Squadron at Myrtle Beach AFB, South Carolina in 1959. Most of the tail was painted Yellow with a Yellow band around the nose intake.
2. F-100D 56-3403 with the 27th Tactical Fighter Wing at Cannon AFB, New Mexico in 1959. There are multi-coloured flashes on the tail fin and matching bands around the nose intake.
3. F-100D 56-3307 with the 50th Tactical Fighter Wing at Ramstein AFB in West Germany in 1959. There are three bands of Insignia Red on the tail fin and one around the nose intake with small White stars. The underwing tanks are painted Red to match.
4. F-100D 55-3775 with the 615th Tactical Fighter Squadron at England AFB, Louisiana in 1958. There is a Black checker pattern on the tail fin and a green band around the nose intake.

The decals are printed to the highest standard and you will be spoiled for choice. Those who prefer 1:48 modelling appear to be looking forward to an up-scaled sheet of these markings judging by the sheet numbering on the title sheet.



Zoukei-Mura INTERVIEW

Part One - Directions

President of Zoukei-Mura, Mr Hideyuki Shigeta, answers MAI's questions about the journey to date and the direction of Zoukei-Mura.

Q: Over the last 10 years, how has your vision of Zoukei Mura changed?

A: **Our dream has always been to make airplane model kits, the likes of which have never been seen before, using the magical material called plastic. That vision has not changed.**

Q: What does success look like from your perspective?

A: **Our greatest success is delivering scale model kits that are truly worthy of the passionate scale model airplane fans worldwide. It is the pure joy felt when building and painting the models, and the ultimate satisfaction when the model is complete.**

Q: What new products are you most excited about in the coming months, or during 2021 or early 2022?

A: **For the 1/32 scale, I am excited for the release of our Fw 190 series and Bf 109 series. As for the 1/48 scale, I look forward to the completion of our F-4 Phantom II series. In particular, the 1/32 Fw 190 and Bf 109 are looking to be fantastic model kits, unlike anything that has been done before.**

Q: Tell us three thrills and three challenges that have been memorable for you over these 10 years?

A: **The first thrill was being able to participate in IPMS Scale ModelWorld in Telford and the IPMS USA Nationals, hearing joyful feedback firsthand from many SWS fans, as well as hearing everyone's high expectations for our upcoming releases. I even got hugs from fans at those shows! We may be just two old dudes hugging, but as a shy Japanese man, those hugs are unforgettable, and I treasure the experience. The second thrill was being able to fulfil those high expectations. The third thrill is continuing to receive message of gratitude**

Zoukei-Mura personnel measuring up various museum aircraft.

and praise via my “SWS Old Man’s Blog” from modelers all over the world.

The first memorable challenge to overcome was explaining the highlights of SWS kits at IPMS shows even though I cannot speak English. I somehow managed communicate using gestures and expressions, but it was not easy. Second is reading through the questionnaire responses from those who entered the SWS Raffle at IPMS shows and taking everyone’s comments and suggestions into account for our product development. Lastly, I continue to challenge myself to write the replies in response to messages to my “SWS Old Man’s Blog,” to the best extent of my abilities.

Q: What is the question that people have not asked? … and what would you like to share in answer to that?

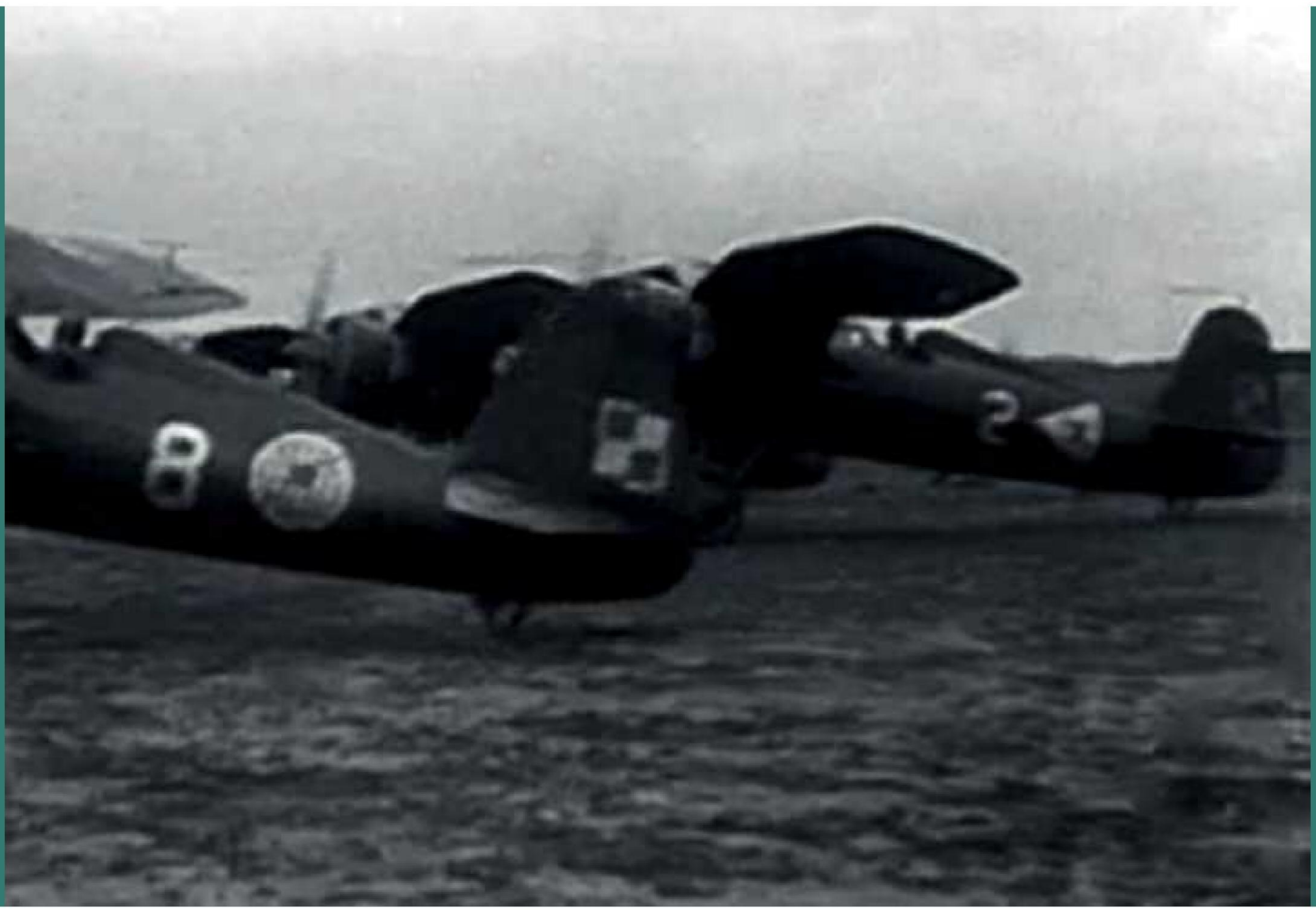
A: It may not a question that no one has asked, but there a certain request that I always must decline: “Come on over to stay at my place!”. I have had the honor to be invited over by visitors at past international IPMS shows. Unfortunately, our business trips are always scheduled to be as short as possible, so I have never had the chance to take someone up on this generous offer.

Q: What differences do you see in customer requirements when comparing the USA, Japan and Europe?

A: I am always moved to see how strikingly similar the interests, passion, demands, and pet peeves of scale aircraft modelers are worldwide. However, I have noticed that when I visit the U.K., the modelers tend to be somewhat more reserved and very deep in their analysis and praise of each kit. When I go to the U.S., the modelers have a different way of expressing support, patting me on the back as they say kind words about our products. As for Japanese modelers, they tend to mostly express worry that Zoukei-Mura will go out of business, because they see that we are always exceeding the economic limits of our company. ■

NEXT TIME

Next time Shigeta-san discusses the impact on the business due to the pandemic and future directions.



ZL P.11c “2” from 112 Fighter Squadron, the plane has the pre-war emblem of the squadron in the form of a “fighting cock”painted on the fuselage. In the cockpit of the aeroplane, F/O Wacław Łapkowski is most probably preparing to take off. In the foreground takes off P.11c “8” of the 111 Fighter Squadron. The photo was taken at the turn of February and March 1939 at the 1st Aviation Regiment base in Okęcie. (pre-war press photography)

Marek Rogusz presents a first-hand combat account of the experience of one Polish fighter pilot in air combat over Lublin.

THE LAST FLIGHT OF SALAMANDER 2

On 7 September 1939, the squadrons stationed at the aerodrome in Kierz did not carry out any sorties – there was a shortage of fuel. As it turned out, it had to be brought in from Dęblin in drums. On that day, the two pilots from 112 Fighter Squadron who had remained in Zaborów, most probably P/O Witold Łokuciewski and F/O Wacław Łapkowski, performed reconnaissance flights as per the orders of the Commander-in-Chief of the Air Force. They rejoined their unit on 8 September. From the morning of that day, sections from 111 and 112 Fighter Squadrons flew patrols. It soon transpired that combatting enemy aeroplanes without having access to reports from the aircraft tracking network was very difficult; this was succinctly described by F/L Jarosław Giejsztowt:

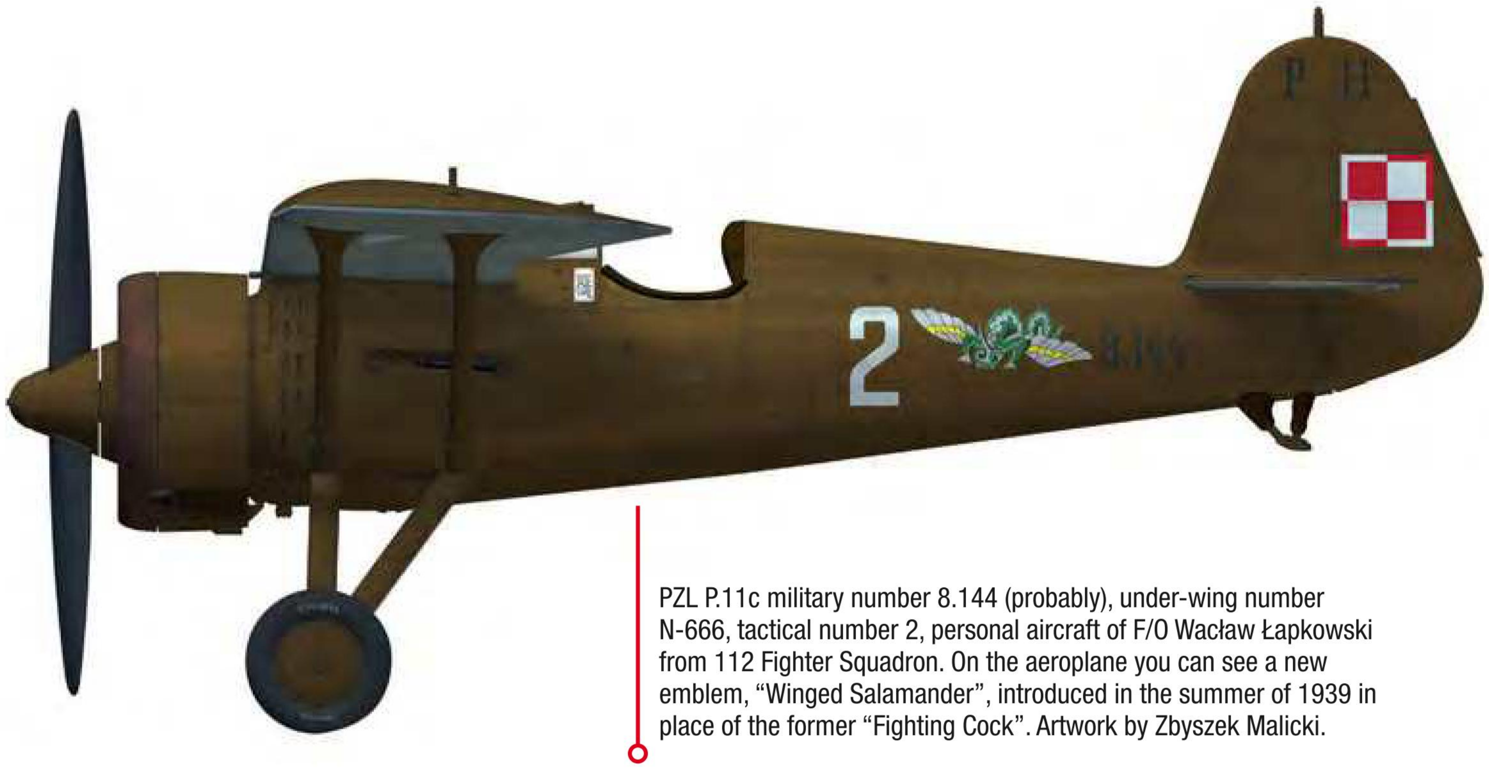
The work here was difficult, for we had no communications with Command, nor did anyone provide us with information about the enemy. There were a great many flights, both reconnaissance and aimed at combatting enemy bombers, but we did not enjoy much success. The aeroplanes started to fail, for they were operating in conditions of high dustiness and neglect, the latter because our mechanics did not have time to carry out inspections or overhauls.

P/O Witold Łokuciewski, along with Lieutenant Wacław Łapkowski from 112 Fighter Squadron, stayed in Warsaw to reconnoitre the German troops advancing on Warsaw from the west and south. Their squadron flew near Lublin, and they joined it on September 8, 1939. In the photo Witold Łokuciewski as a pilot of the 303 Fighter Squadron of the Polish Air Force in Great Britain. (arch. Wojtek Matusiak)

F/O Wacław Łapkowski was a pilot of the 112 Fighter Squadron from 1936. After the death of Lieutenant Stefan Okrzeja in air combat, Lieutenant Łapkowski returned to the position of deputy commander of the squadron he had held before the outbreak of the war. Lieutenant Łapkowski often flew PZL P.11c marked with the fuselage number “2”. (arch. Marek Rogusz)

Air Combat Over Lublin

Fighter patrols were resumed on the morning of 9 September 1939. At around 10.00 am, successive waves of Luftwaffe bombers – in total more than 70 Heinkel He 111s from KG 4 – appeared in the skies above Lublin. Their approach was accompanied by a sweep carried out by twenty-one Messerschmitt Bf 110s from I./ZG 76. An air battle ensued, engaging the majority of the Polish fighter forces stationed in the vicinity of Lublin – the Pursuit Brigade, III/2 Fighter Wing, III/4 Fighter Wing, and 152 Fighter Squadron. Both sides reported strongly exaggerated numbers of kills, which is the norm for sudden air engagements involving large numbers of aeroplanes.



PZL P.11c military number 8.144 (probably), under-wing number N-666, tactical number 2, personal aircraft of F/O Wacław Łapkowski from 112 Fighter Squadron. On the aeroplane you can see a new emblem, "Winged Salamander", introduced in the summer of 1939 in place of the former "Fighting Cock". Artwork by Zbyszek Malicki.

The Last Flight of Salamander 2

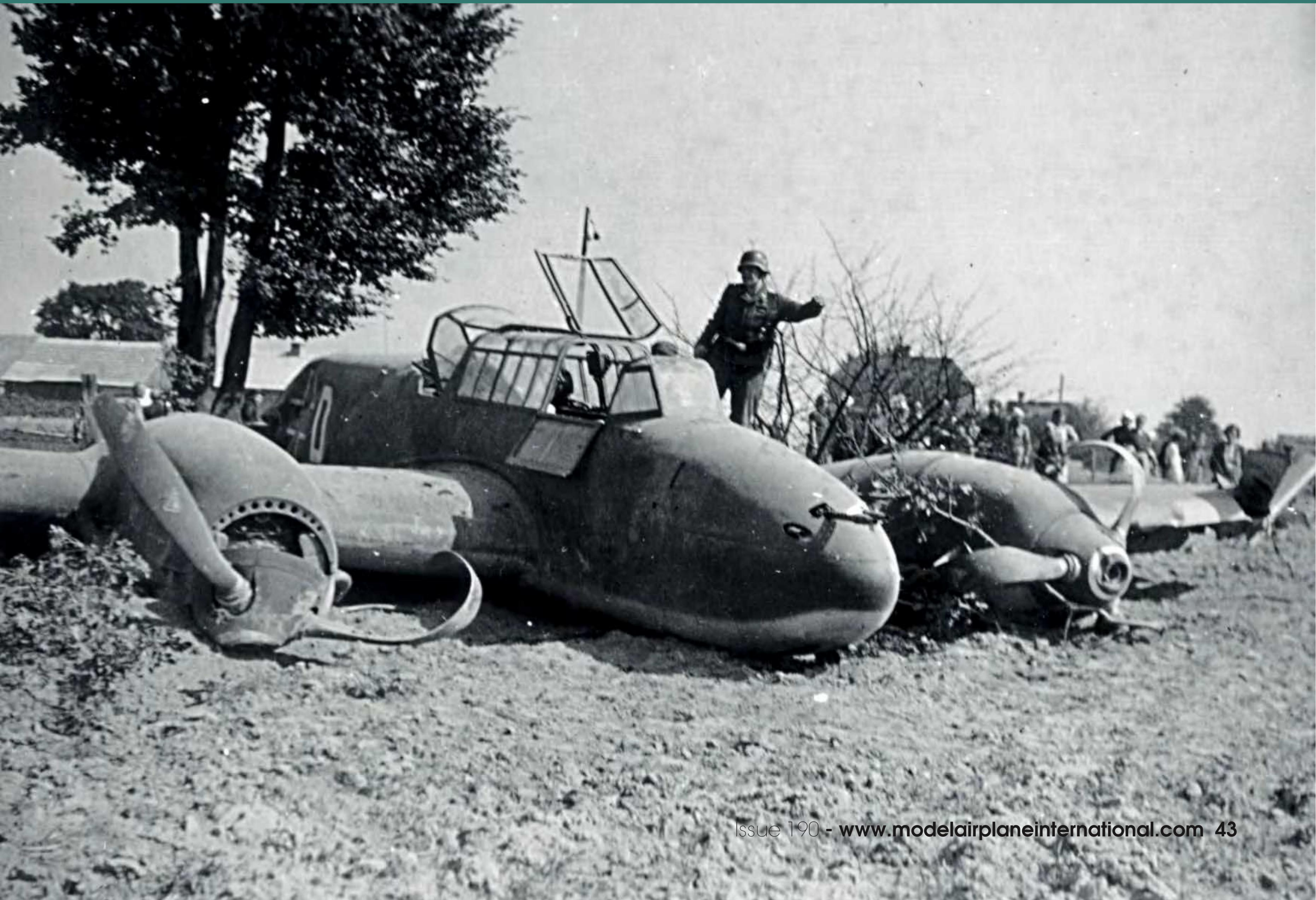
While the battle raged in the skies over Lublin, F/O Wacław Łapkowski, flying alone on Salamander "2", gave chase after a section of three Heinkel He 111s from II./KG 4. His pursuit, continued over nearly 100 km (!), was interrupted by an attack of Messerschmitt Bf 110s from 2./ZG 76. Below is F/O Łapkowski's personal account, which he wrote down in the diary of P/O Mirosław Ferić.

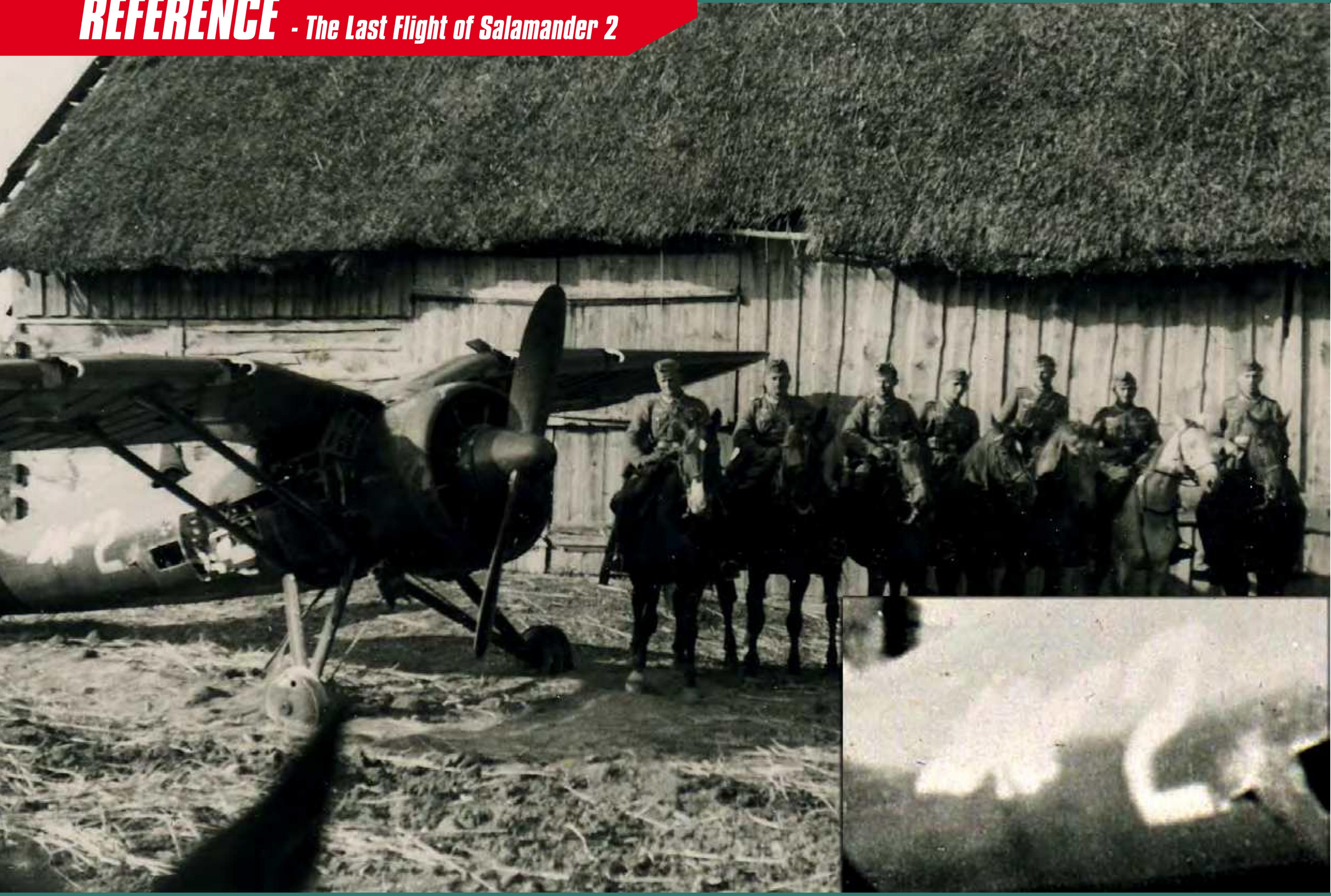
In Kierz that day we could not complain for want of enemy aircraft. The Germans were flying from west to east, heading for Lublin and the nearby townships. Their bombs had started fires, and there were flames and smoke everywhere. Our sorties had no effect, for the enemy would simply pass us by, making use of his superior speed.

At around noon I took off for my second flight, and initially I was running after the enemy without success. I roamed the skies north of our airfield, hurling insults at the Germans for not accepting battle. While in this mood, I spotted a trio of He 111s racing west from the direction of Lublin. I took a fancy to them immediately. I cut across their path. They did not change course but only accelerated. The one on the right lagged behind somewhat. I attacked him – the rightmost one – from the vertical. Once I levelled off, I saw beads of tracer snaking towards me from the German's machine gun. Being close and slightly below, I fired off a burst without taking careful aim.

In the meantime, however, "my" He 111 pulled level with his leader, or perhaps even overtook him somewhat. The gunner of the second machine then tried to rough me up. We were passing the River Wisła, flying westwards. Hoping to avoid the machine gun fire, I kicked the pedal with my left foot and lost height a bit in order to attack my tormentor. ▶

Messerschmitt Bf 110C from I./ZG 76 after a forced landing on September 9, 1939, after fighting with Polish fighters near Lublin. (arch. Marek Rogusz)





F/O Wacław Łapkowski on “2” with Salamander chased the section of three He 111 from II./KG 4 alone. The chase after almost 100 km (!) was interrupted by the attack of the Messerschmitts Bf 110 from 2./ZG 76. Lieutenant Łapkowski, during his return to the Kierz home airfield near Lublin, had to land forcibly (it is possible that the engine failed). According to the pilot’s account, he dismantled the radio, machine guns, and ammunition boxes from the plane. The German army captured the immobilized plane. The photo shows German soldiers at the abandoned PZL P.11c “2” with Salamandra. You can see that the aeroplane is partially incomplete, part of the fuselage cover is missing, leather parts in the pilot’s cockpit, and tires removed from the rims. (arch. Marek Rogusz).

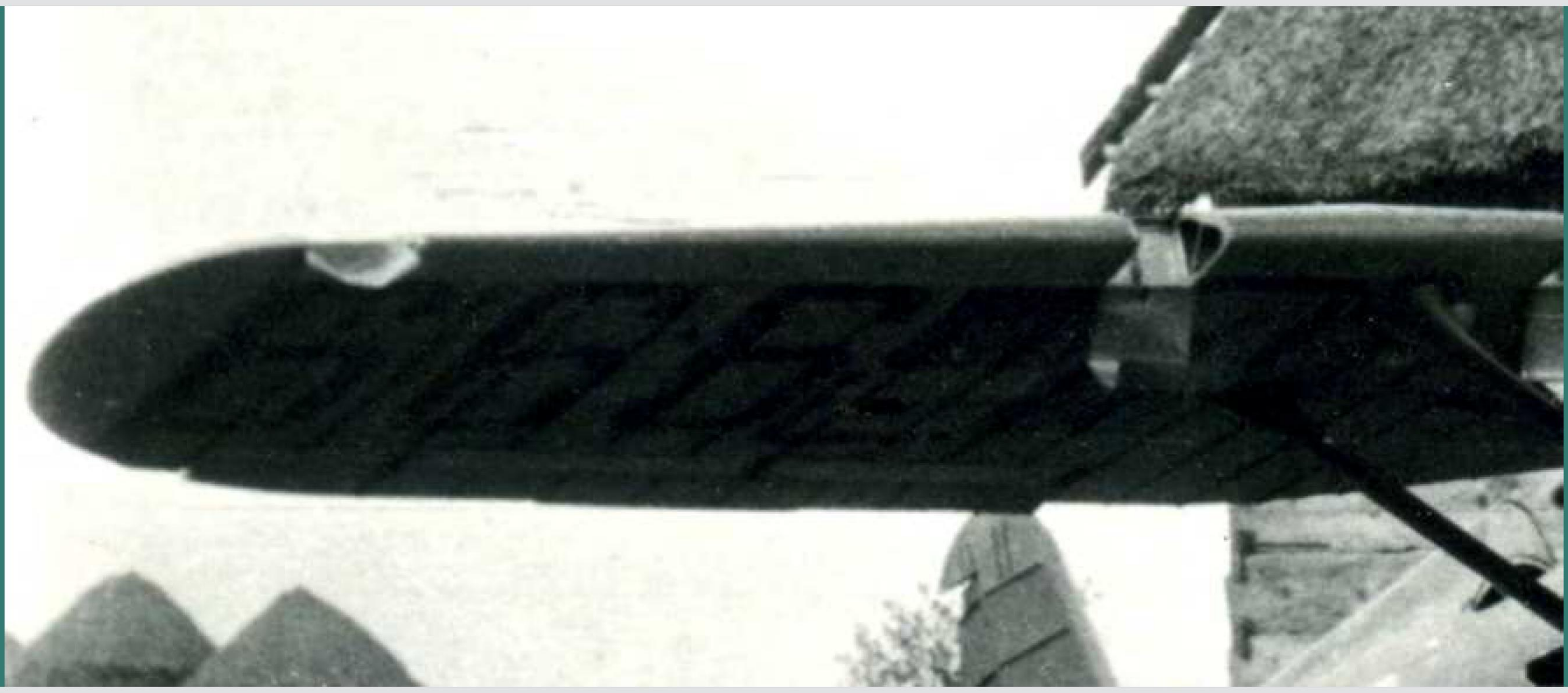
I fired a burst from behind and below. He lost his cool and started turning, first left and then right. Their whole section lost formation. Again, however, I was targeted by one of the German gunners. So I tried once more. I placed myself behind his stabilizer. A short burst. I noticed that no one was shooting at me now. I could aim without any hindrance. The German’s dive increase. Flames belched from his left engine. The enemy was falling earthwards to his grave.

My good mood was interrupted by a crackle from behind. It sounded as if someone were tearing a sheet of hard paper. I knew this sound. I nosed up. An Me 110 flew right by me. It proceeded in a slight left turn. I had the impression that we were both observing the falling aircraft. I could not follow it. I was afraid that they would shoot me down from behind. Thus, I watched from a height of over 1,500 m, while at the same time glancing at the newly arrived German. The bomber hit the ground. But the “new” aeroplane was trying to get on my tail. I took up the fight. But then, from I don’t know where, four or five of them appeared, all Me 110s. Today I was on a winning streek, I thought to myself. Maybe I’ll get lucky once again. But these were not as easy to deal with. They arranged themselves in a defensive circle and I was forced to break off time after time, for they kept getting on my tail. Finally, however, I got a chance to shoot. One of the Me 110s looped the loop, while I cut across and found myself on his tail. And a burst … but the German wasn’t idly waiting … The result was somewhat strange. I had the feeling that my aeroplane was stopping. The German flew off. But I had another one on my tail. I turned sharply to the left and downwards. The German remained above me. I looked at my rev-counter; it was showing 15. Pulling on the throttle lever had no effect.

I took an easterly course. The Germans, instead of finishing me off, remained above. Just behind me, I saw puffs of anti-aircraft artillery. Whose artillery it was – ours or the enemy’s – I do not know. But it may well be that this artillery fire saved me. I flew on, losing height, with oil spraying my face. My revs were falling. I was just nearing the River Wisła when I saw yet another German. He was flying right towards me, slightly to my left. In my mind, I said a few choice words to him. I could not run, nor could I attack. But the German flew straight on. We passed each other at a distance of some 400 m. He hasn’t seen me, I thought. It is possible that he thought the same thing.

I passed the River Wisła. I was at a height of a few hundred metres, the engine was packing it in, just several dozen revs, a bang, and the propeller stopped. I started looking for a field. A few moments later my wheels touched ground and the plane rumbled to a standstill. With this I would like to close. I shall not at all mention that I returned to the aerodrome in a beautiful, 8-cylinder Chrysler sports car (or some other bloody contraption), in order not to arouse the envy of “Ox” [P/O Ferić – author’s note], who in any case is envious to the present day.

F/O Łapkowski managed to stop a car carrying an evacuee – a captain from the Signal Corps. With his help, he removed the radio station and machine guns from the stricken aeroplane, and also emptied its ammunition boxes. Due to the prevailing chaos, there was no chance of evacuating and repairing the aircraft. Thus, the fighting career of Salamander “2” came to an end. The aircraft, however, continued to intrigue the residents of the nearby village, who removed various potentially useful elements from the hulk; the most highly prized were strips of rubber from the tires, leather fittings from the cockpit, the metal skin, and various lines and piping. The discarded wreck also drew the attention of Wehrmacht soldiers, who posed in front of it for photographs and took away pieces as mementos.



A close-up of the PZL P.11c "2" with a Salamandra police number left on September 9, 1939, in one of the villages near Puławy. The plane was marked with the three-digit number "666-N" under its wings. (arch. Tomasz Kopański).

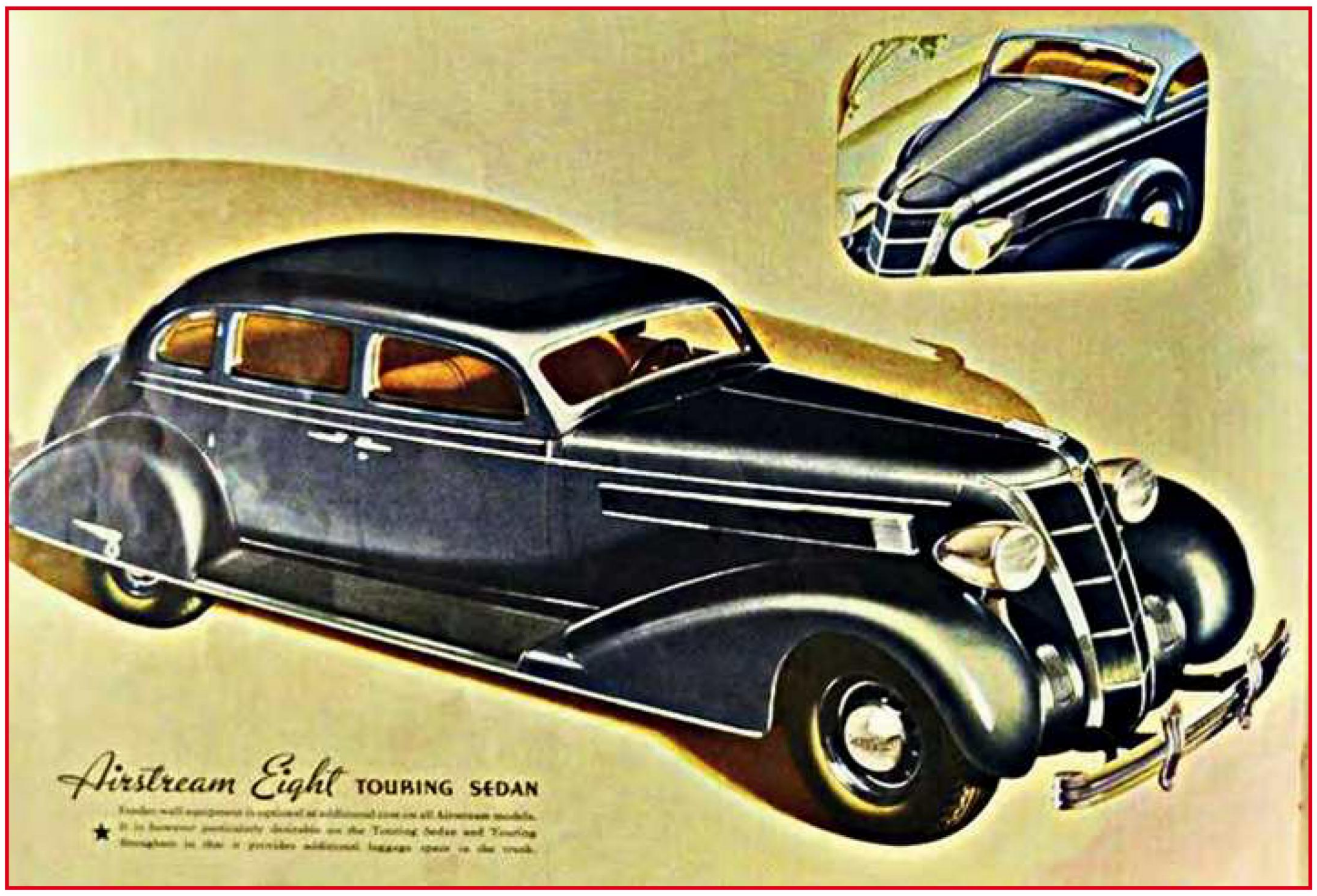
The Squadron is Still Fighting

F/O Wacław Łapkowski and 112 Fighter Squadron continued the fight. Unfortunately, the unit received chaotic and oftentimes contradictory orders, instructing it to move from one airfield to another, while the lack of an aircraft tracking network and fuel, as well as the unavailability of ground crews – they were forced to move along roads that were packed with refugees and under constant Luftwaffe attack – made it impossible for the Squadron to act in an effective manner. During this period, the Polish fighter pilots carried out mainly reconnaissance and liaison flights, although air-to-air combat did sporadically occur. Everyone was waiting for the anticipated transports of foreign aircraft; certain of the pilots were to collect them from Romanian ports and start training. The expected attack of the Western allies – France and Great Britain – which was to be launched in accordance with the treaties signed with Poland, did not materialise. Worse still, on 17 September 1939, in accordance with the provisions of the Ribbentrop-Molotov Pact, Poland was attacked from the east by the Red Army. In this situation the Pursuit Brigade was ordered to cross the Romanian border along with its surviving aeroplanes in order to continue the fight for Polish independence from abroad. ■

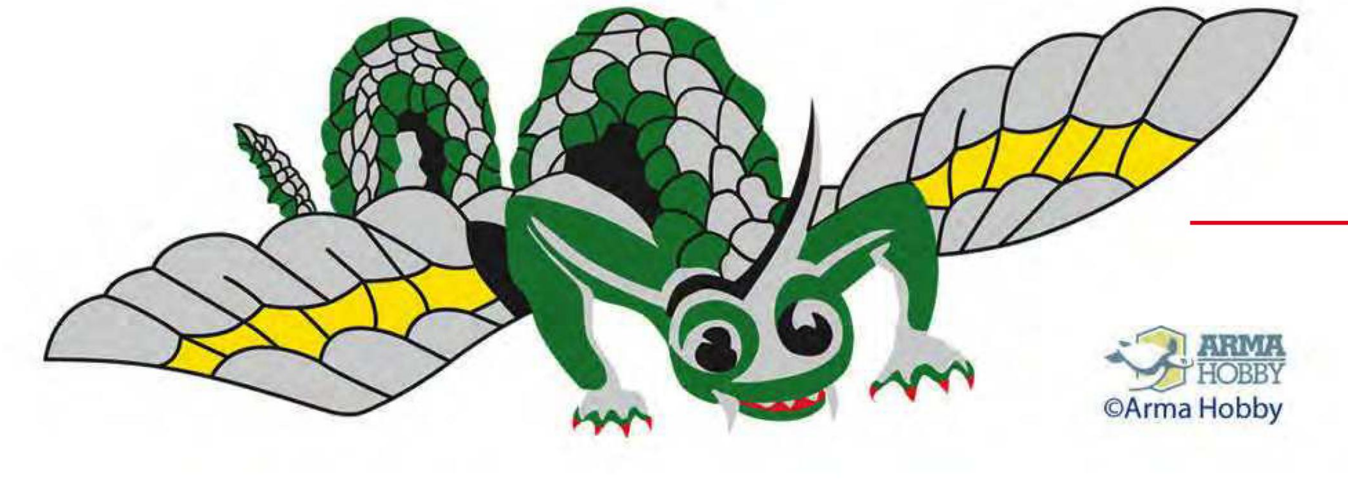
English Translation by Maciej Zakrzewski.

A series of articles on Salamander 2 and other markings from the ARMA Hobby 1:48 scale PZL P.11c are available online on ***http://armahobbynews.pl/en/***

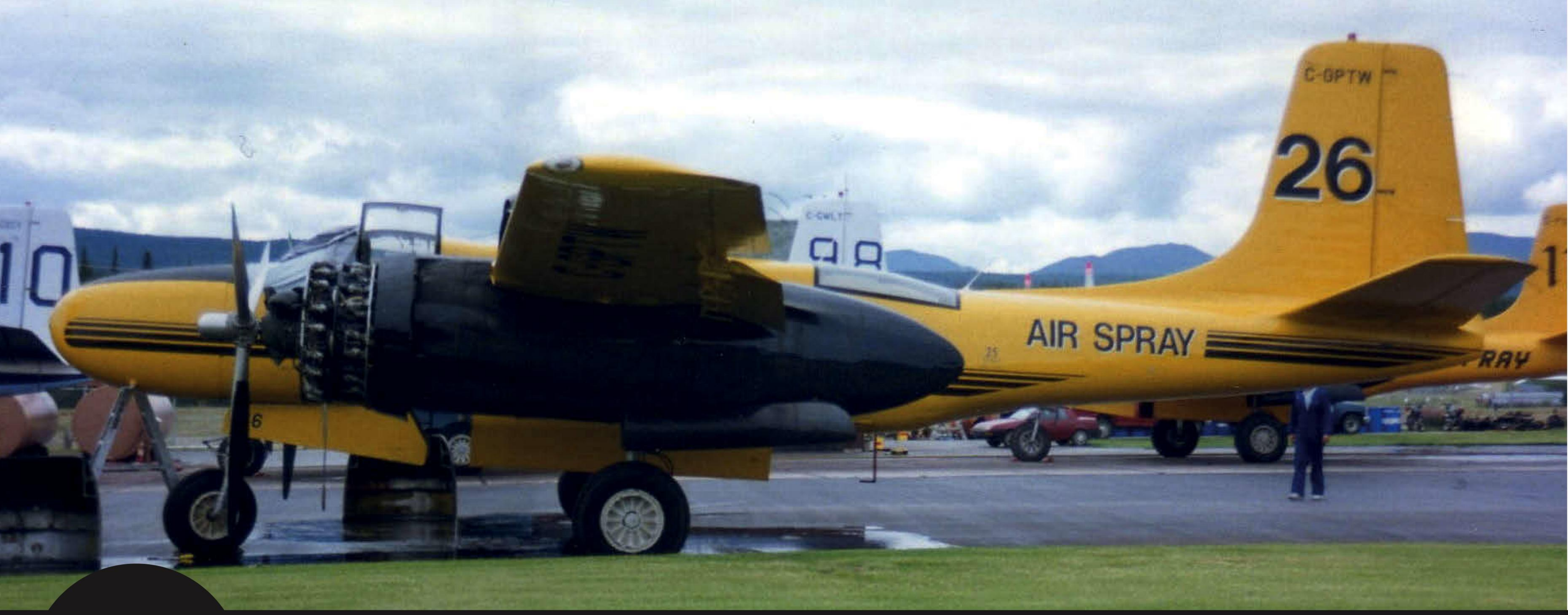
> ***"My good mood was interrupted by a crackle from behind. It sounded as if someone were tearing a sheet of hard paper. I knew this sound. I nosed up. An Me 110 flew right by me."***



We do not know the Signal Corps captain's identity who picked up Lieutenant Łapkowski with the elements removed from P.11c to the Kierz airfield near Lublin. However, likely, it was just such a Chrysler Airstream that drove to the airfield, arousing the pilots' envy gathered there.

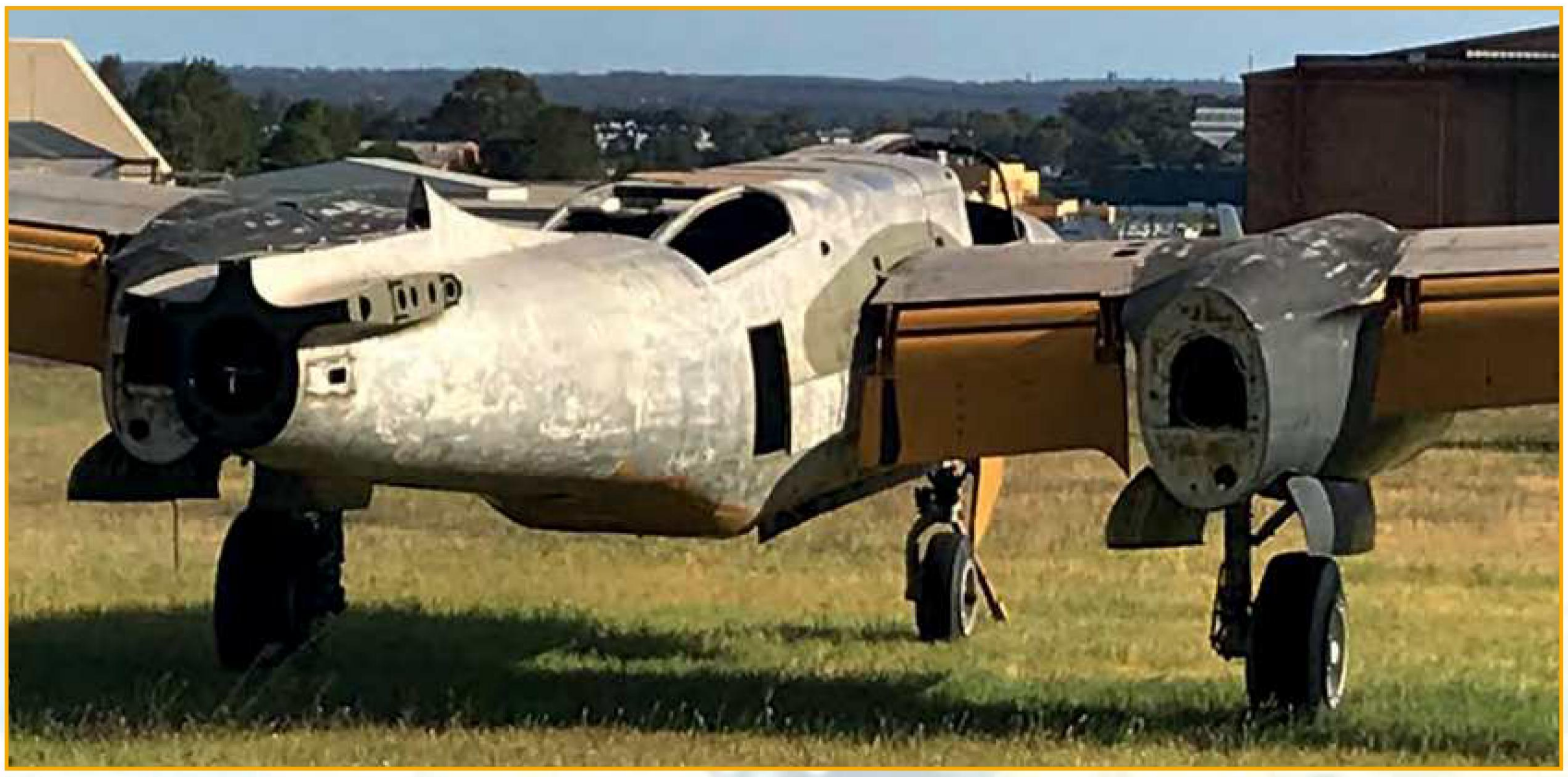


A detail view of the new Salamander emblem.



ROADSIDE RELIC

NO.1 - B-26C INVADER



Some of you will know that although Doolittle Media is based in the UK, I live and work in Sydney. As I was filling my car at the petrol station recently, I glanced across the road to Bankstown Airport and saw a B-26 Invader, partially disassembled and parked on the grass.

This is probably the ex-Air Spray B-26C Invader, Serial No. 43-22653, which had been on display at the now-closed Australian Aviation Museum on the other side of Bankstown Airport.

We'll have another interesting roadside relic next time! ■

IN PRINT

SAMPLES FOR REVIEW

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Model Airplane International, Doolittle Mill, Doolittle Lane,
Totternhoe, Bedfordshire, LU6 1QX, United Kingdom.
Companies in the European Union should also add our
VAT number, which is GB 789 7020 84

JET FIGHTERS
OF THE U. S. NAVY AND MARINE CORPS
PART 2: MACH 1 AND BEYOND
Chance Vought F8U Crusader
Grumman F11F-1F Super Tiger
Douglas F4D-2/F5D Skylancer
McDonnell F-4 Phantom II
Vought XF8U-3 Crusader III
General Dynamics/Grumman F-111B
Grumman F-14 Tomcat
Israeli Aircraft Industries F-21 Kfir
McDonnell Douglas F/A-18 Hornet
Northrop F-5E & F-5F Tiger II
General Dynamics F-16N Fighting Falcon
McDonnell Douglas/Boeing F/A-18E & F Super Hornet
Lockheed-Martin F-35 Lightning II
by Bert Kinzey
Art by Rock Roszak

Jet Fighters of the US Navy and Marine Corps-Part 2: Mach 1 and Beyond

- By Bert Kinzey
- Artwork by Rock Roszak
- Published by Detail and Scale
- Guide Price USD$14.99
- ISBN: 9798688948257
- 113pp softback, 210 x 297mm
- https://www.amazon.com/dp/B08KSK6T4X

Following up Part 1 of the Jet Fighter series, this volume focuses on the fighters that go faster than the speed of sound. There have been 13 fighters that meet that criterion. Starting with the F8U Crusader to the F-35, including prototypes like the F-111B. Besides these fleet fighters, the adversary aircraft such as the F-16N and F-5E are also covered. This period of fighters included the war fighters of the Cold War.

The book is a paperback book containing 113 pages of with the history, operational use and development of each aircraft. Almost all the photos are in full color, along with some aircraft profiles by Rock Roszak. There are 208 photos with 188 in full color and 10 full color profiles by Rock Roszak.

Detail & Scale are known for their extensive coverage of aircraft and this book is a great overview of these fighters. Not just the fighters are covered. Advancements in aircraft carriers is discussed because as the fighters grew bigger and flew faster they needed bigger ships with different landing systems and powerplants. The carrier development shows from the Essex class of the late 1950s to the modern day Ford nuclear carriers and the new Marine assault ships.

Then the book gets into the fighters, starting with the F8U Crusader, the last gunfighter. The development of this great fighter plane is chronicled. The photo recon birds are shown as well. Historically significant for the role they played in the Cuban Missile Crisis.

The F11F-1F Super Tiger is shown. Although not used in the fleet it is a beautiful airplane. As was the Douglas F5D Skylancer, the successor to the F4D Skyray. This colorful aircraft was used by NASA in some gawdy colors for visibility.

Then the next fleet fighter is the iconic, F-4 Phantom. Used by the Navy and Marines this aircraft came to optimize the Vietnam War. Deploying in that theater in some quite colorful paint schemes. The prototype, through the B, J, N and S are covered. With 40 kills by Navy/Marine F-4s it would become the best air to air fighter the fleet used in Vietnam until the 1980s when the remainder were converted to QF-4 drones.

The XF8U-3 Super Crusader is up next. This fighter was better than the F-4 in the flyoff, however, it was decided that two engines and two pilots were better than one. So this aircraft was relegate to obscurity.

Touted by Robert McNamara as the be all, end all fighter for the Navy and the Air Force, the F—111B was tested. Its variable sweep wings would be an indicator of what was to come next but its heavy weight precluded it from carrier operations.

Tomcat. The word conjures up movie star roles such as ‘Top Gun’ and ‘The Final Countdown’. The Turkey, as it was affectionately known, is an icon in naval aviation history. Flying at the very end of the Vietnam War, at least at the very end with the withdrawal from Saigon, the F-14 had a wide array of armament from which to fly and fight with, including the AIM-54 Phoenix missile system. The Tomcat shot down Libyan fighters in 1981, the first air to air kills since the Vietnam war. They did it again in 1986, again shooting down two Libyan fighters. The Tomcat evolved over time into a Bombcat and photo recon aircraft by adding TARPS pods. The F-14 continued to dominate in the skies of the Mideast, especially in the service of the Iranian Air Force. Eventually replaced by the F/A-18 Hornet, which was actually a smaller and less capable aircraft, the F-14 had held the front line for over 30 years.

The F-5 Freedom Fighter was used by the Navy as an aggressor in its Top Gun program. The paint schemes on these fighters are quite eye catching. They are painted up to mimic potential foreign adversaries. Of course, those that watched ‘Top Gun’ will recognize the MiG-28 version of this aircraft.

Another adversary aircraft is the F-21A Kfir out of Israel. This aircraft is which was designed in Israel is the only adversary aircraft that wasn’t designed and produced by a US company. It also featured some really nice paint scheme.

The replacement adversary aircraft for the F-21 was the F-16 Fighting Falcon. Used by both Marines and Navy, the F-16N, A and B was used to be the simulator for the MiG-23. The Navy procured 22 single seat F-16N and four TF-16Ns. This aircraft, especially without some of the usual equipment, is the fastest F-16 at the time. F-16As and Bs were used once the embargo of Pakistan took place in 2002. These adversaries are quite colorful and change over their lifetime.

The F/A-18 Hornet, or legacy Hornets, replaced the F-14. After losing the fighter contract with the Air Force to the F-16, the F-17 was redesigned as the F/A-18 and proposed to the Navy. The Hornet actually replaced the F-4, A-7 and eventually the F-14. The combat history is included and the operational testing. Besides the role of the fleet fighter, performing both fighter and attack missions, the Hornet also did the photo recon and the aggressor role. It literally became the jack of all trades. This aircraft was used by the Navy’s Blue Angels for the most part.

Following on the heels of the Hornet came the Super Hornet. Part of that came about because by redesignating it the Navy could just call it an upgrade and use upgrade money. The Super Hornet had very little in common with Legacy Hornets, save the name. It was over 25% bigger and as such none of the systems were interchangeable. The Super Hornet actually brings a solid airframe to do all the missions on a carrier, fighter, bomber, photo recon, refueler, and electronic counter-measures aircraft. This meant that the logistic umbilical was significantly smaller with common parts for the airframe. The Super Hornet has just become THE Navy aircraft.

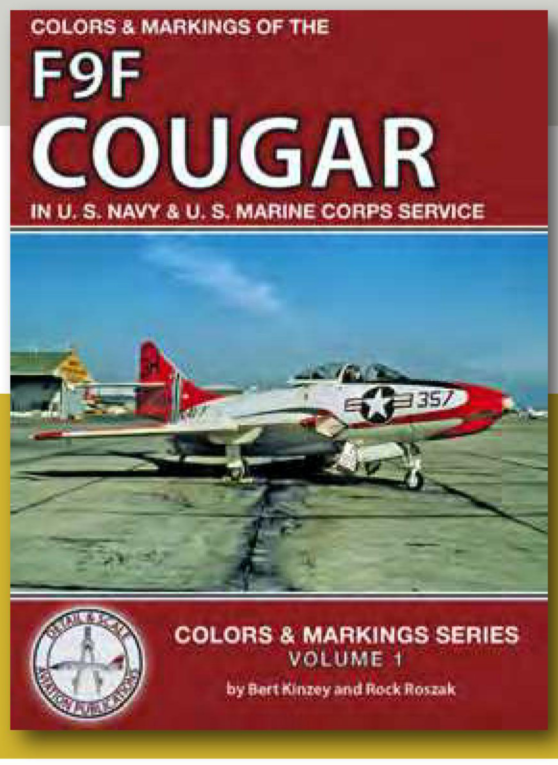
The newest Navy and Marine Corps fighter is the stealth F-35. This aircraft may be the last of the manned fighters of the Navy. There are three versions and they are all discussed along with plenty of photos of them.

Seeing all these aircraft in overview in full color photos and with profile drawings is inspirational to say the least. Reading about the various deployments, engagements and history is a great way to get backstory for your models. Now if you are looking for the in depth, nuts and bolts photos this book isn’t that kind. It is a great book for the overview and history of each aircraft. Does that mean it doesn’t have some in depth photos? No, of course not. There are cockpit photos and photos of most of the engines used on the covered aircraft. If decal manufacturers just looked through this book they would have some great selling sheets. While this review is based off of the printed version from Amazon there is also a digital version that will allow you to enlarge the photos and get even more use out of it. This is another great reference book by Detail & Scale.

Highly Recommended.
Floyd S. Werner Jr.

Thanks to Detail & Scale for the review copy. You can obtain yours on Amazon at https://www.amazon.com/dp/B08KSK6T4X or Detail & Scale direct https://www.detailandscale.com

FOREWORD
INTRODUCTION
AIRCRAFT CARRIER DEVELOPMENT
VOUGHT XF8U-3 CRUSADER III
GRUMMAN F-14 TOMCAT
NORTHROP F-5E, F-5F, & F-5N TIGER II
MCDONNELL DOUGLAS F/A-18A, F/A-18B, F/A-18C, & F/A-18D HORNET


COLORS & MARKINGS OF THE
F9F
COUGAR
IN U. S. NAVY & U. S. MARINE CORPS SERVICE
COLORS & MARKINGS SERIES
VOLUME 1
by Bert Kinzey and Rock Roszak

F9F Cougar in US Navy & Marine Corps Service

- Colors & Markings Series Vol. 1
- By Bert Kinzey
- Artwork by Rock Roszak
- Published by Detail and Scale
- Guide Price USD$23.99
- ISBN: 979-8-5751818-0-4
- 121pp softback, 210 x 297mm

Detail and Scale closed out 2020 with a new book; F9F Cougar in US Navy & Marine Corps Service; Colors & Markings Series Vol. 1. This is not a duplication of the previous F9F Cougar Detail & Scale Series Volume 2 Revised Edition released during the summer of 2020, the new Cougar book compliments the previous F9F Cougar in Detail & Scale Series, and also Jet Fighters of the US Navy and Marine Corps Part 1: The First Ten Years, which includes a chapter on the Cougar. The three books provide an excellent reference in text and photos of the Cougar’s history. Unlike the Detail & Scale series, this book does not include kit reviews, that being previously covered.

Because the book’s main theme is Color & Markings, there is little design and development coverage, this being presented in full detail in the previous F9F Cougar in Detail & Scale book. Following the book’s theme, the new F9F Cougar book begins with a review of the 4 primary paint schemes applied to the Cougar during its service career. First the overall Gloss Sea Blue scheme that lasted from 1952 to 1961. Next came the familiar Light Gull Gray over White scheme that lasted until the end of the Cougar’s service life. When the Cougar reached the end of its service life they were converted to drones to be shot down, giving fighter pilots the opportunity to shoot down a real aircraft, although they were operated remotely by drone controllers. This leads to the overall Gloss Insignia Red scheme, later replace by highly visible Fluorescent Red-Orange, and finally International Orange applied to the Cougar drones. To easily identify the Cougar drone controller from the drone, Engine Gray was applied to the fuselage, the wings and vertical tail surfaces were painted Orange-Yellow, with Insignia Red for rudder and wings bands. Last there is the standard Training scheme with a gloss white fuselage and either International Orange or Fluorescent Orange applied to the two seat TF-9J Cougars.

For me, and I think many modelers will agree, the photography is excellent. The color images in particular are of high quality with a wide variety of different color schemes well presented. The black and white images are likewise of equal high quality. And noteworthy are the color profiles by Rock Roszak with accompanying squadron history. The book closes with a chapter on the Blue Angles and a brief history and brilliant photos of their F9F-8 and TF-8T Cougars.

For me this was a particular interesting book as I have always had a keen interest in jets of this period, it must be an age thing. This book is recommended as an enjoyable read and combined with superb Cougar photos that will allow model builders a wide selection of color schemes to select from when building their Cougar model.

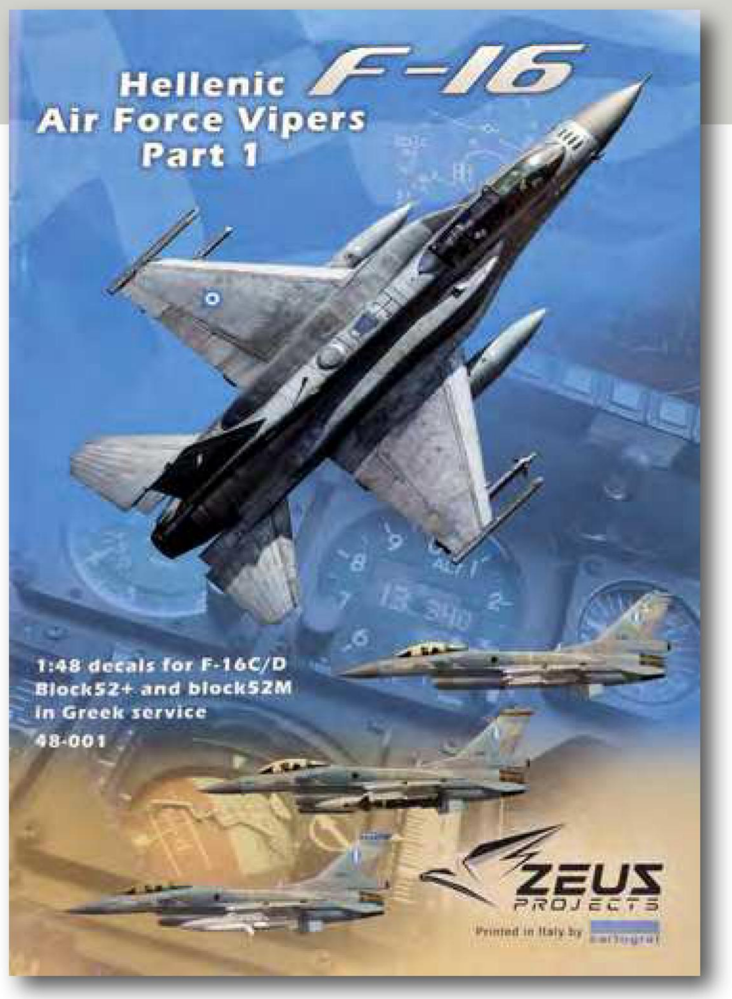
Highly Recommended.
Donald Linn

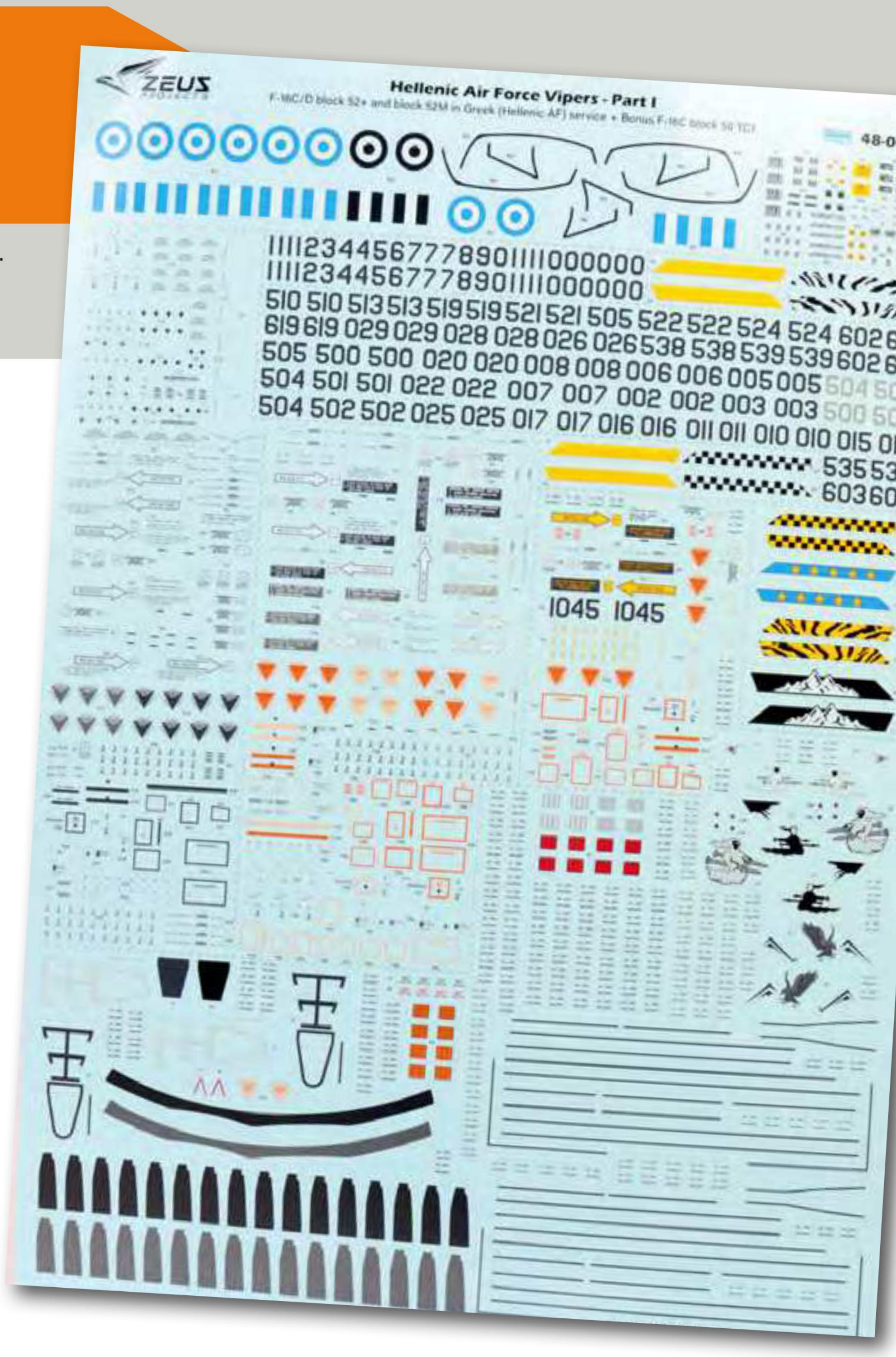
Thanks to Detail & Scale for the review copy
https://www.detailandscale.com

Colors & Markings of the
F9F
COUGAR
COUGAR PAINT SCHEMES
DRONE & DRONE CONTROLLER COLORS
MARINE SQUADRONS
TEST & EVALUATION SQUADRONS
BLUE ANGELS

TRANSFER LIST

Written by Alan Firbank.


Hellenic F-16
Air Force Vipers
Part 1
1:48 decals for F-16C/D Block52+ and block52M in Greek service
48-001
ZEUS PROJECTS
Printed in Italy by cartograf


ZEUS PROJECTS
Hellenic Air Force Vipers - Part I
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ZEUS DECALS

https://the48ers.com

HELLENIC AIR FORCE VIPERS PART ONE DECAL PREVIEW 1:48 SCALE ITEM NO. 48-001

The 48ers has sent us Preview information on a new line of decals, Zeus, whose debut release covers up to up to 4 F-16C/D Block 52+ and 16C/D Block 52 Advanced in Hellenic (Greek) Air Force (HAF) service. These are available right now.

F-16C/D Hellenic Air Force Vipers - Part I decal set includes markings and full stencils in 1/48 for up to 4 F-16C/D Block 52+ and 16C/D Block 52 Advanced in service with Hellenic (Greek) Air Force (HAF).

This decal sheet, printed by Cartograf Italy, A4 size (approx.. 210mm x 297mm or 8-1/4 x 11-3/4 in.) decal sheet allows the modeller to build a model depicting one of the following HAF squadrons: 337 “Ghost” Sq., 340 “Fox” Sq., 343 “Star” Sq. (operating F-16C/D Block 52+) as well as the 335 “Tiger” Sq. and 336 “Olympos” Sq. (operating F-16C/D Block 52 Advanced Vipers).

Also, full stencils and markings are provided to model the “1045” frame, a previously F-16C block 50 Viper upgraded to the Advanced specifications and the only one with a GE engine!

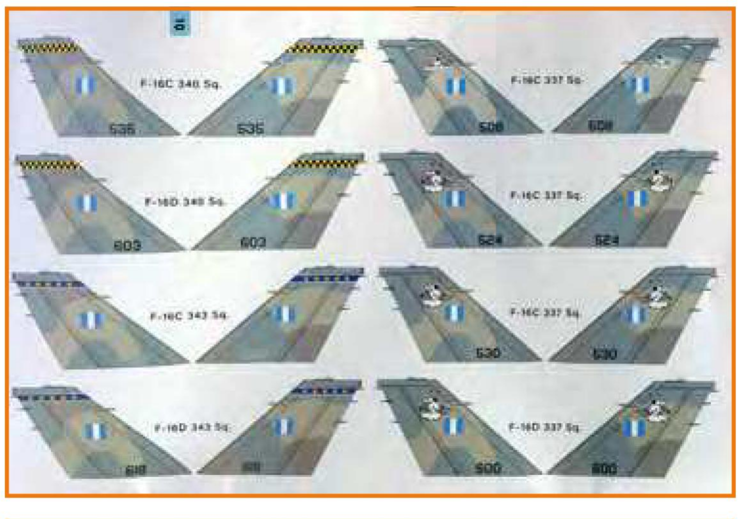
Key items include:

- Standard as well as “worn” markings
- Canopy frame stencils (x2)
- Full cockpit and wheel bay stencils
- Squadron tail badges
- Exhaust nozzle & ring stencils (2 versions)

The set is designed to be used with the Tamiya kits but it could be used for any other kit with minor modifications.

Thanks to Zeus Projects for the information and images. Available now online from The 48ers https://the48ers.com/f-16c-d-hellenic-air-force-vipers-part-i-20419.html

F-16C/D block52+


F-16C 340 Sq.
F-16C 337 Sq.
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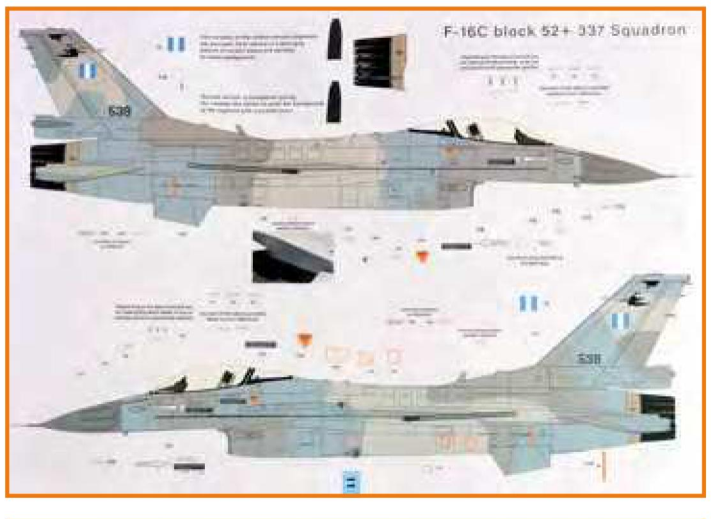
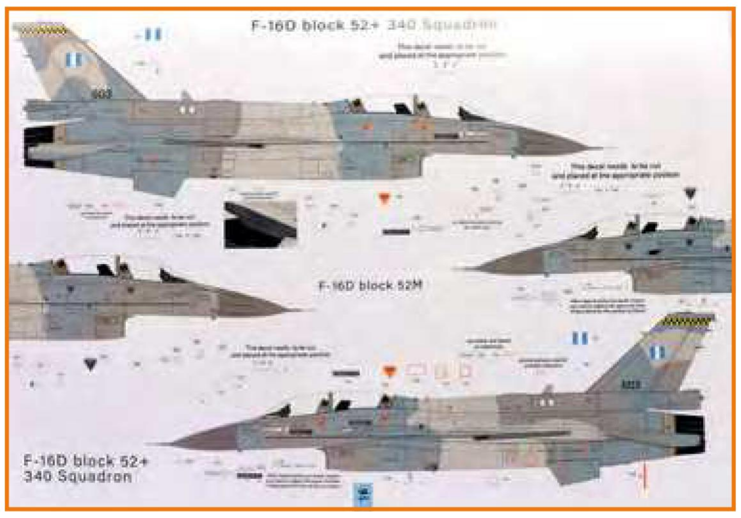
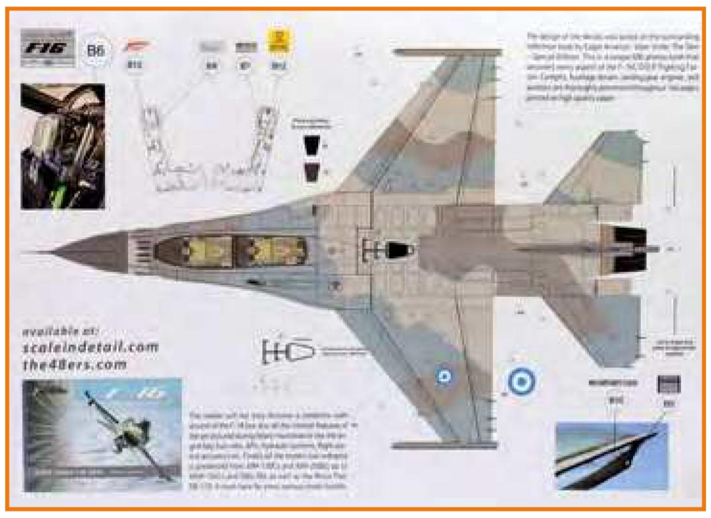
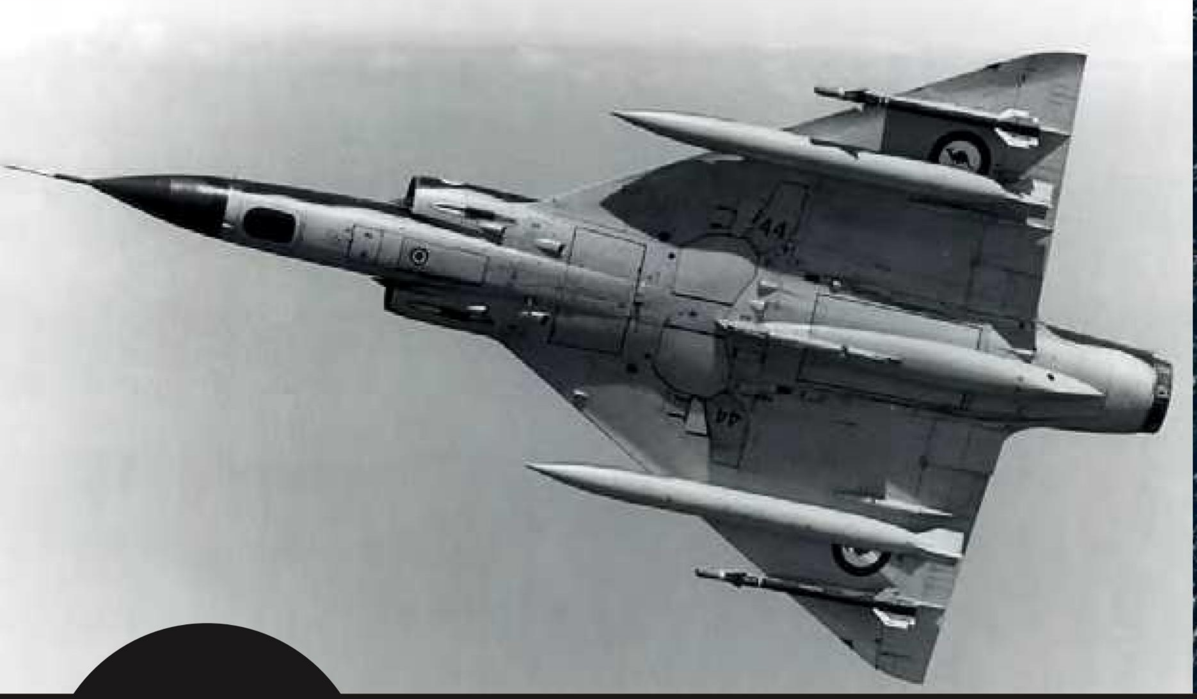
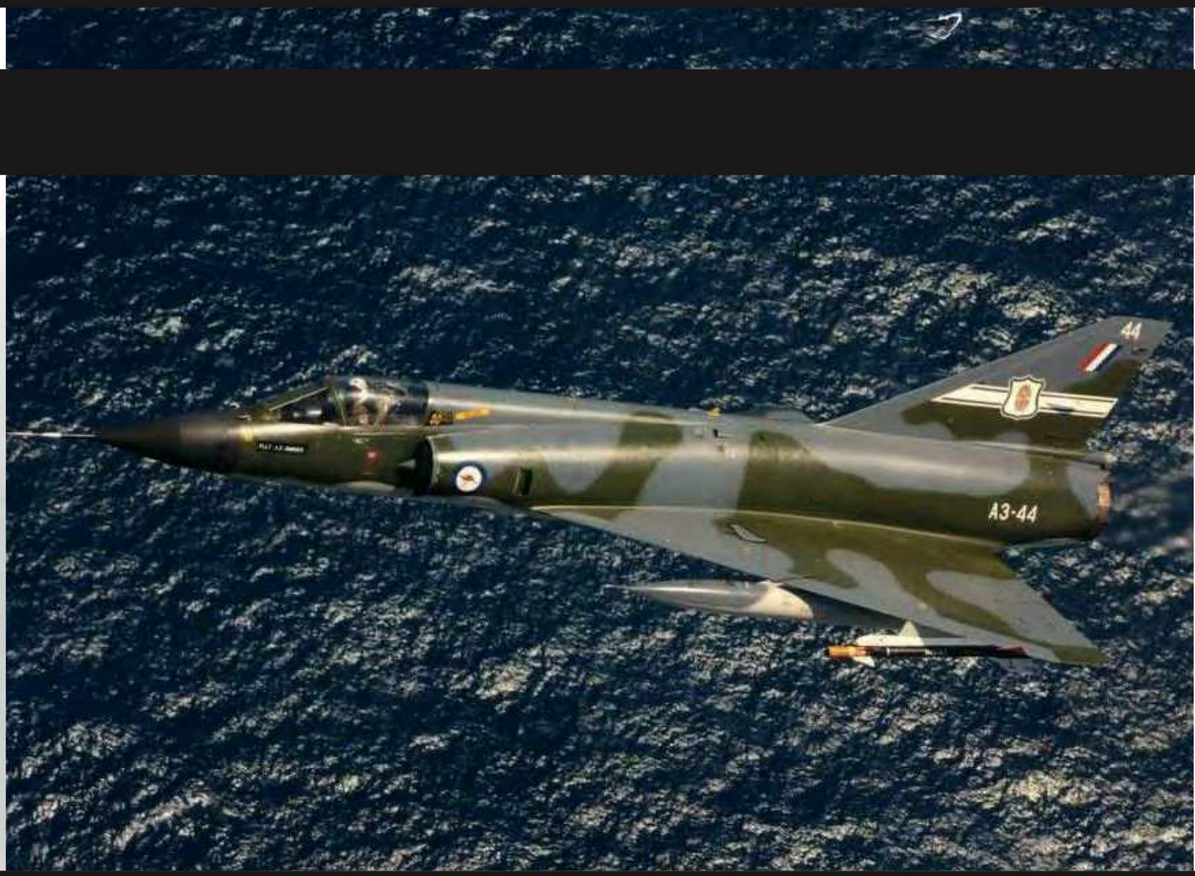

F-16C block 52+ 337 Squadron


F-16D block 52+ 340 Squadron
F-16D block 52M
F-16D block 52+
340 Squadron


available at:
scaleindetail.com
the48ers.com





ROADSIDE RELIC

NO.2 - MIRAGE IIIO

Parked next to the B-26B Invader that I photographed at Bankstown Airport recently was a Mirage IIIO.

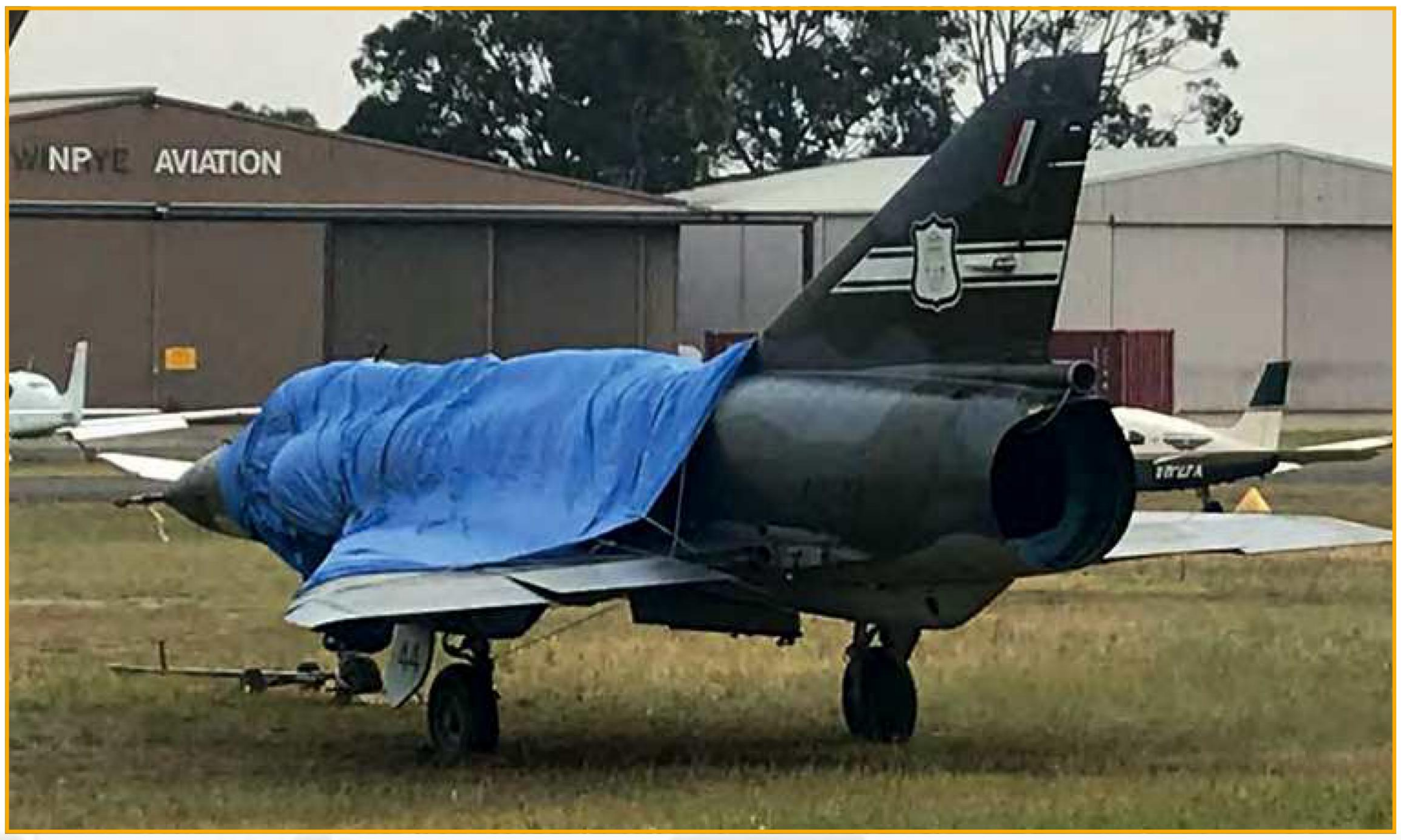
This one is a bit more complete than the Invader, although it is missing its Atar engine and the hydraulics could do with a top up.

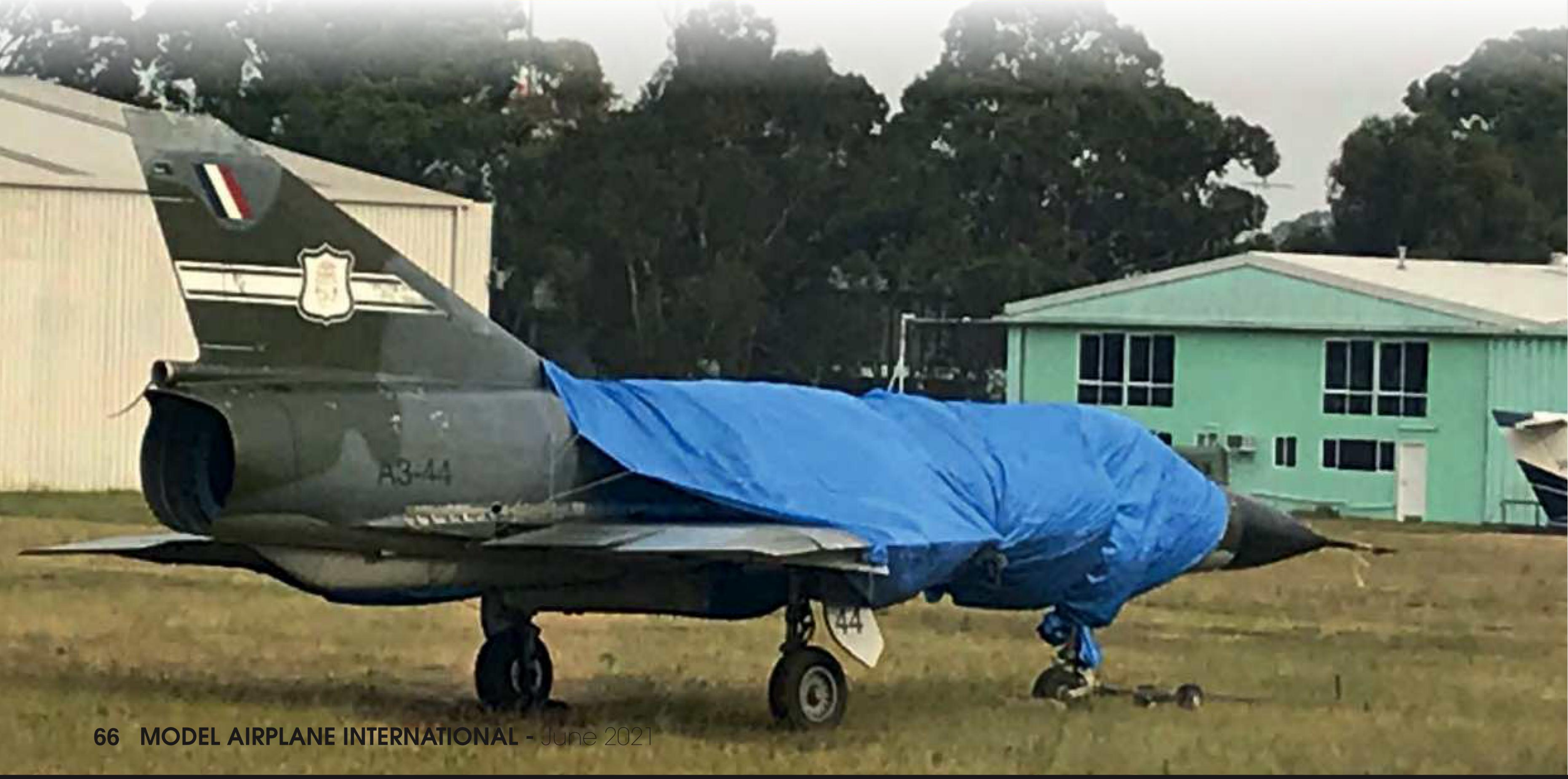
This is ex-RAAF Mirage IIIO, serial no. A3-44. It wears tail markings featuring 77 Sqn's "Grumpy Monkey".

I've added a few photos here of the same aircraft in its glory days.

The sharp-eyed amongst you might notice another interesting aircraft in the distance near the hangars - something that looks like a Mustang. I assume that this is a ScaleWings SW51 Mustang, a 70% scale replica (well, maybe "replica" is a bit too complimentary, but it certainly looks like a Mustang from a distance, if you squint a bit...).

I'll let you all know what turns up next! ■





IN PRINT

VALIANT WINGS

The Messerschmitt Me 262 A Complete Guide to the Luftwaffe's First Jet Fighter

Completely Revised and Updated Airframe and Miniature No.1 Second Edition

- by Richard A. Franks
- Published by Valiant Wings Publishing Ltd
- Guide Price £24.95
- ISBN 978-1-912932-15-3
- 208pp softback, 297 x 210mm

This is another of Valiant Wings second editions that have been published in the last few months. The original Me 262 book was published 10 years ago and was the first in their Airframe and Miniature series. Much of the history of the Me 262 remains the same but in the space of 10 years additional information will become available. Also in that time, a good number of kits, decals and accessories have been released. This new edition also marks the 10th Anniversary of Valiant Wings. Readers who bought the original Me 262 book will be looking at a very different work that is almost double the number of pages of Volume 1, it has a new cover illustration and 1:48 plans added inside the back cover.

Many readers will be by now familiar with the general format of this Airframe and Miniature series. The book begins as usual with a history of the conception and development of the Me 262 which surprisingly begins as early as 1938 when Messerschmitt were considering a twin-engine jet aircraft. Many photos and informative copy guide us through the development of the Me 262 series, its use in service and how the allied advance and the end of the war in Europe would bring an end to the development of this excellent flying machine. It is amazing to see how Germany managed to keep production going until the very day that allied troops captured their remote production sites in the countryside.

The next four chapters take us through the development of the various variants of the Me 262 with the end pages showing proposed future versions that progressed no further than the drawing board. These are all illustrated using photos and diagrams. In the photos we see a wide variety of camouflage schemes applied to the 262s in the closing months of the war. The next chapter, devoted to Camouflage & Markings provides an in-depth look at many of these schemes, illustrated with Richard Caruana's familiar colour profiles as well as many photos, some in colour. Several 262s were captured in airworthy condition and test flown by the allied nations at the end of the war.

Moving away from the actual aircraft, Chapter 6 takes an approximately twenty-page look at the vast number of Me 262 kits that are currently in production with a handful of the older ones that are still readily available. Each one is given a 'kit-box' type review describing what is available in the box and the known pros and cons of each. All the common kit scales are covered from 1:144 to 1:32.

A selection of kits is given a more in-depth appraisal in Chapter 7. First on the list is the Airfix 1:72 Me 262B-1a/U1 two seat night fighter with the addition of a few after-market parts such as new radar aerials on the nose. A Hobby Boss 1:48 kit and Revell 1:32 kit are the subjects of the other full-build reviews in this chapter.

As usual, the Build a Collection chapter shows the differences between Me 262 versions from the early airframe prop-driven examples to the post war 262s made by Avia in Czechoslovakia. Those wishing to build a detailed Me 262 model should find all the reference photos and diagrams in Chapter 9, In Detail, that they would need. Almost forty pages are devoted to this close look at Me 262 airframes, inside and out.

The final dozen or so pages are covered with lists of Me 262 kits, decals, accessories and books that have been released over the last few years. Many of these fall into the 'gone but not forgotten' category. It takes three pages to list the known decal releases. The book concludes with an 8pp fold-out section with six pages of 1:48 plans and two more pages of Me 262 detail in copy, photos and diagrams.

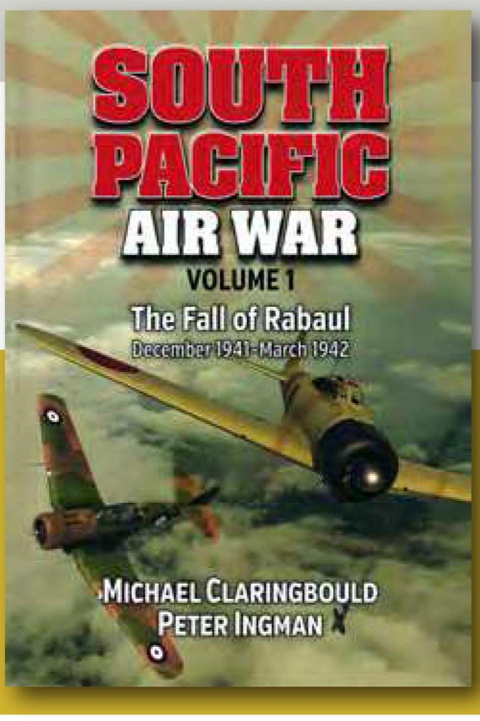
This is another excellent second edition of an earlier Airframe and Miniature publication. This one is a much more radical update compared to the others we have seen recently. If you own the original book, you will find this second edition is very different and well worth adding to your reference library.

Thanks again to Valiant Wings for supplying their latest title for review. See the Valiant Wings web site: valiant-wings.co.uk for ordering and availability or visit your favourite specialist book traders such as Avid Reader/ Bookworld Wholesale (bookworldws.co.uk). Hannants also stock Valiant Wings titles.

Alan Firbank

SAMPLES FOR REVIEW

Please send all items for review to the following address:
Model Airplane International, Doolittle Mill, Doolittle Lane,
Totternhoe, Bedfordshire, LU6 1QX, United Kingdom.
Companies in the European Union should also add our
VAT number, which is GB 789 7020 84



AVONMORE BOOKS

South Pacific Air War Vol.1
The Fall of Rabaul – Dec 1941- March 1942

- by Michael Claringbould & Peter Ingman
- AUD$39.95 normally plus shipping
- available online from Avonmore Books
- **(on special at the moment for AUD$29.95)**

https://avonmorebooks.com.au

Avonmore Books is a newer Australian publisher (and based in my home state of South Australia), specialising in military and aviation history, with a particular interest on the early period of the Pacific War. Avonmore prides itself in being the only mainstream Australian military history publisher producing full colour, illustrated books. While expensive to produce, we strive to produce titles that are a pleasure to own and read, and which incorporate first-class profiles, illustrations and maps.

Their key authors have unique backgrounds. These include Darwin-based Dr Tom Lewis, a former naval officer who is an expert in Northern Australian military history. Another is former diplomat Michael Claringbould, raised in Port Moresby, whose knowledge of both the New Guinea conflict and Japanese aviation is recognised worldwide.

The proprietor and author of Avonmore Books is Peter Ingman, who began his writing career as co-author of the best-selling Zero Hour in Broome in 2010.

This volume, the “South Pacific Air War Vol 1,The Fall of Rabaul – Dec 1941- March 1942”chronicles aerial warfare in the South Pacific from December 1941 until March 1942, during which air operations by both sides became a daily occurrence. As Imperial Japanese Navy flying boats and land-based bombers penetrated over vast distances, a few under-strength squadrons of the Royal Australian Air Force put up a spirited fight.

However it was the supreme power of aircraft carriers that had the biggest impact. Four Japanese fleet carriers facilitated the capture of Rabaul over a devastating four-day period in January 1942. The following month, the USS Lexington’s fighter squadron VF-3 scored one of the most one-sided victories of the entire Pacific War.

By March 1942 the Japanese had landed on mainland New Guinea, and the scene was set for a race to control Port Moresby. This is the full story of both sides of an air war that could have been won by either incumbent, but for timing, crucial decisions and luck.

The two authors are uniquely qualified to tell this story. Raised in Port Moresby, Michael Claringbould is a globally-acknowledged expert on the New Guinea air war and Japanese aviation in particular. Peter Ingman is an acclaimed military history author specialising in the early Pacific War period.

The book consists of 18 chapters that documents the chronological progression of the early air war around Rabaul at the start of the Japanese actions on the Southern Pacific. The text has been written in an informative manner that is extremely easy to read and actually weaves a good story within it. These chapters follow the rapid expansion of the Japanese actions and the Allied response leading to the invasion of Rabaul, involving IJN carrier attacks through to the day the USS Lexington’s planes, led by Lt ‘Butch” O’Hare savaged the Japanese bombers, with O’Hare becoming an ace in a morning. To support the text, are numerous maps and diagrams, explaining visually what was occurring as well as quite a number of historical photographs of both sides through this period.

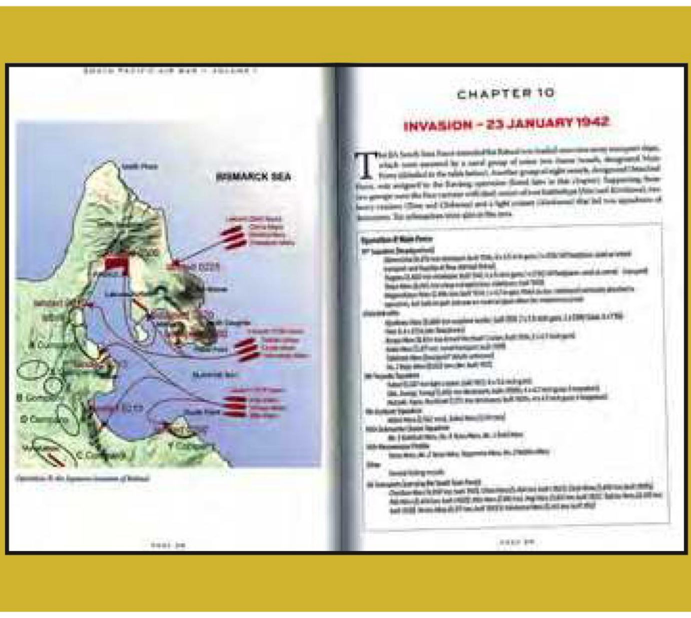
There are several appendices at the end of the book with lists of “Aircraft Losses & Fatalities” for both the Allies and the Japanese. Following on are 15, 3-way colour profiles of aircraft types that took part in that theatre as well as the technical and historical information for specific aircraft. The third section there are 7 pages of side colour profiles of Japanese aircraft from different units and times across that period. These last two sections will be extremely useful to modellers with an interest in the period and theatre.

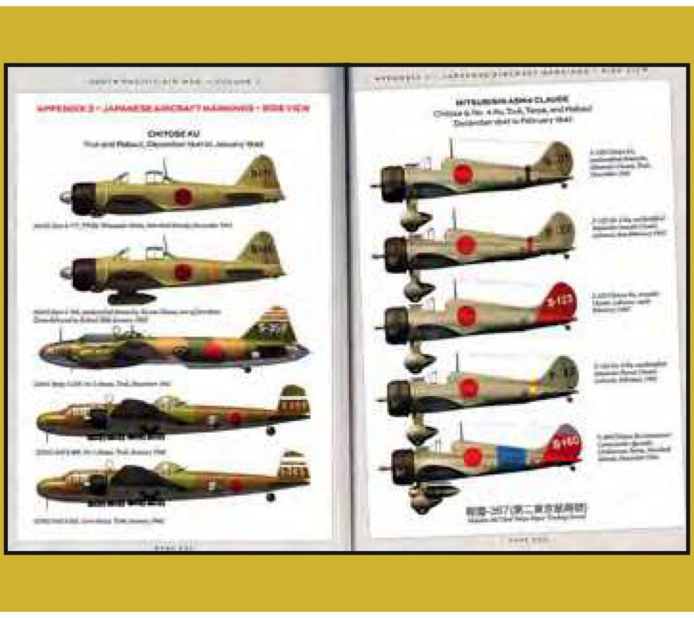
Conclusion

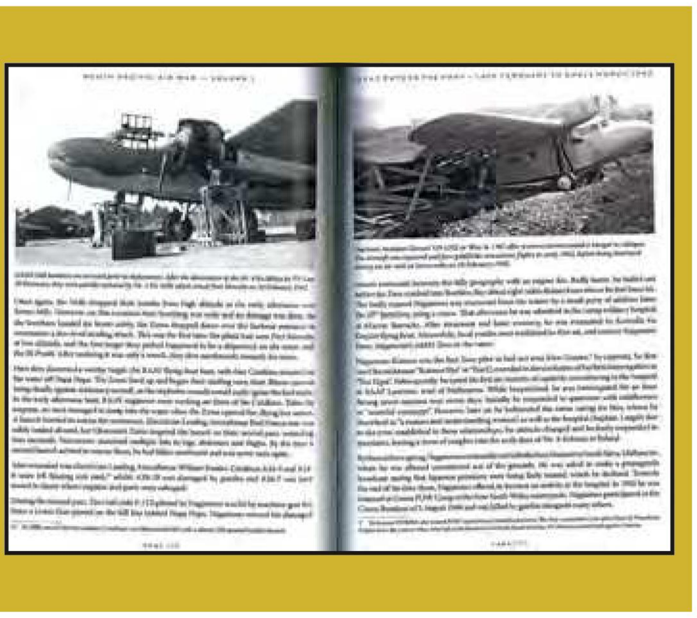
This book has been produced for the aviation enthusiast of the early South Pacific theatre of operations involving the Japanese and Allied air units. For the modeller there is plenty of colour reference material in profiles etc supplied as well as some good period photographs of aircraft. All in all, this book is a good read and useful for the modeller.

Well Recommended.

David Couche







TRANSFER LIST

Written by Alan Firbank.

EURO DECALS FROM FANTASY PRINTSHOP

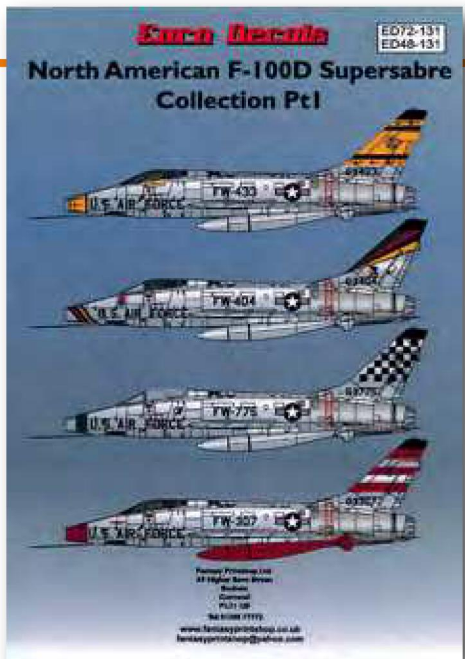
www.fantasyprintshop.co.uk

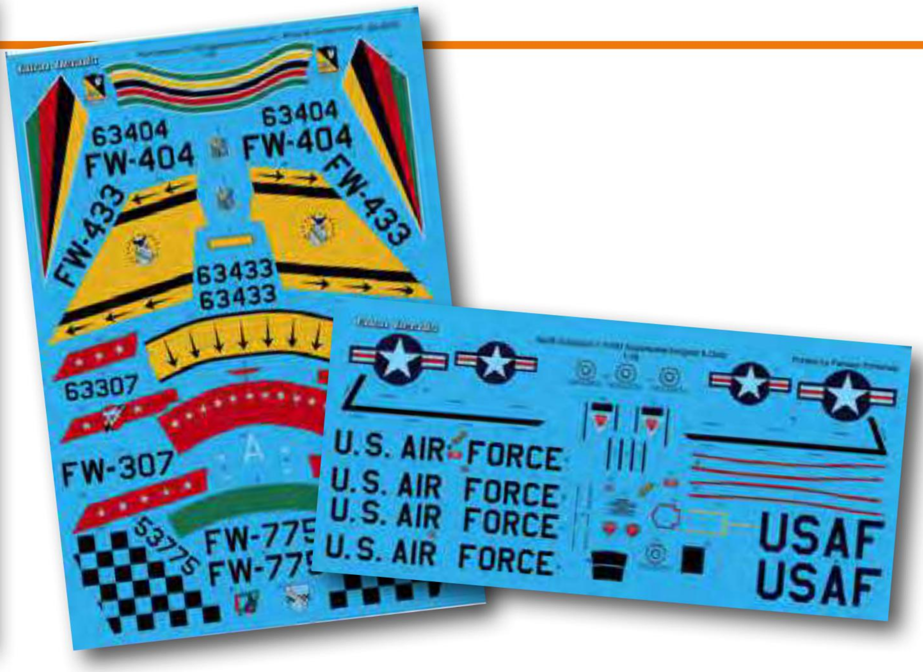
We are always pleased to open envelopes containing decal samples to introduce to you, our readers. This month we see decal sheets for 1:48 F-100D Supersabres, an enlarged version of their earlier 1:72 sheet and a new 1:72 sheet of four F-100D markings.

NORTH AMERICAN F-100D SUPERSABRE COLLECTION PT I (SHEET NO. ED-48131)

Here is a great set of markings for four USAF Super Sabre F-100Ds in overall natural metal finishes. The decals arrive on two sheets, one with the individual aircraft markings and a generic sheet with stars and bars, stencilling, etc. The instructions are very good with each subject shown in four views on an A4 sheet.

- F-100D 56-3433 with the 352nd Tactical Fighter Squadron at Myrtle Beach AFB, South Carolina in 1959. Most of the tail was painted Yellow with a Yellow band around the nose intake.
- F-100D 56-3403 with the 27th Tactical Fighter Wing at Cannon AFB, New Mexico in 1959. There are multi-coloured flashes on the tail fin and matching bands around the nose intake.
- F-100D 56-3307 with the 50th Tactical Fighter Wing at Ramstein AFB in West Germany in 1959. There are three bands of Insignia Red on the tail fin and one around the nose intake with small White stars. The underwing tanks are painted Red to match.
- F-100D 55-3775 with the 615th Tactical Fighter Squadron at England AFB, Louisiana in 1958. There is a Black checker pattern on the tail fin and a green band around the nose intake.


Euro Decals
ED72-131
ED48-131
North American F-100D Supersabre Collection Pt I
www.fantasyprintshop.co.uk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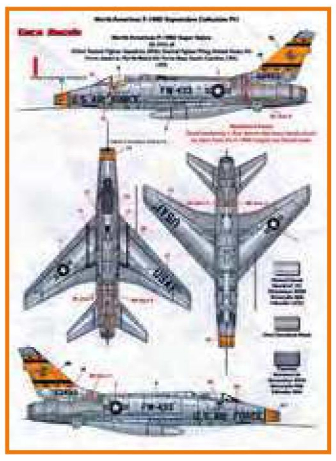
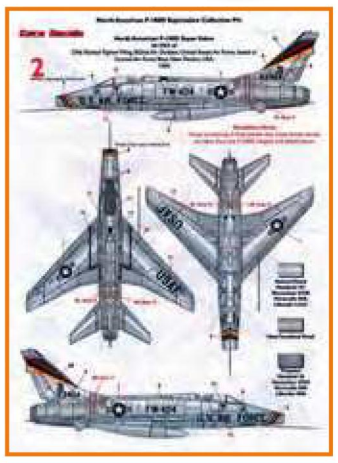
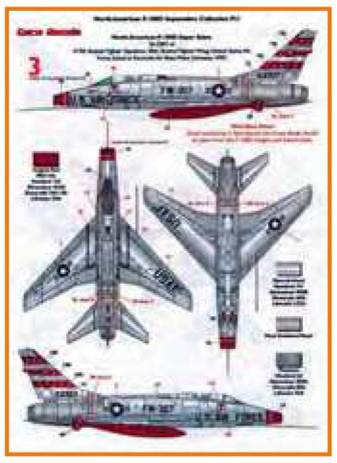
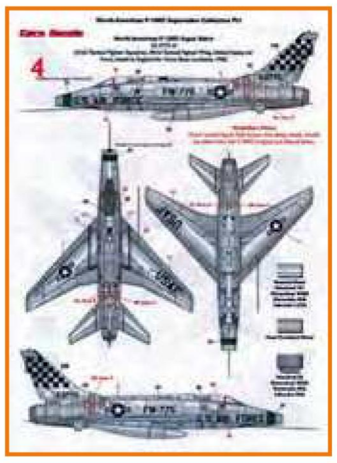
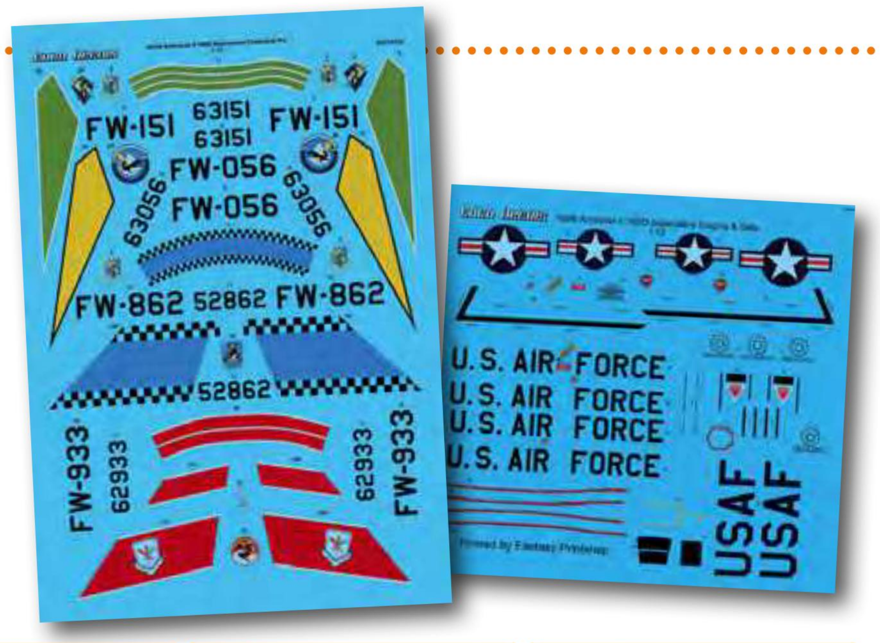








Euro Decals
ED72-132
North American F-100D Supersabre Collection Pt2
www.fantasyprintshop.co.uk
email fantasyprintshop@yahoo.com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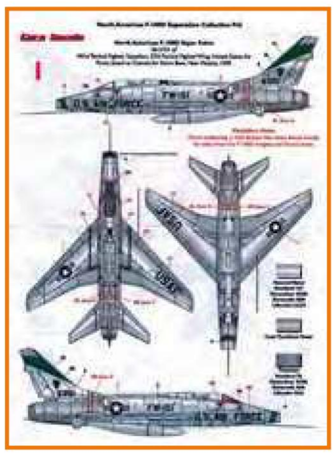
U.S. AIR FORCE
USAF

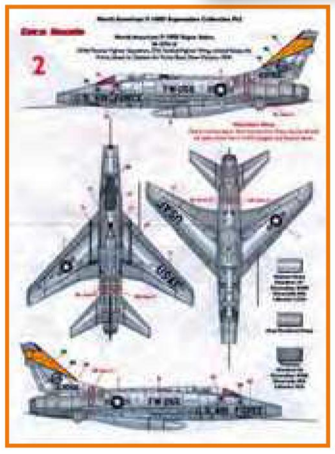
NORTH AMERICAN F-100D SUPERSABRE COLLECTION PT 2 (SHEET NO. ED-72132)

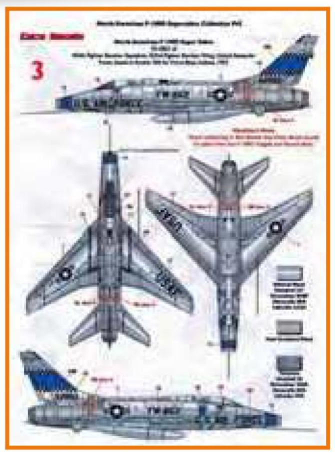
Here is a great second set of markings for four USAF Super Sabre F-100Ds in overall natural metal finishes. The decals arrive on two sheets, one with the individual aircraft markings and a generic sheet with stars and bars, stencilling, etc. The instructions are very good with each subject shown in four views on an A4 sheet.

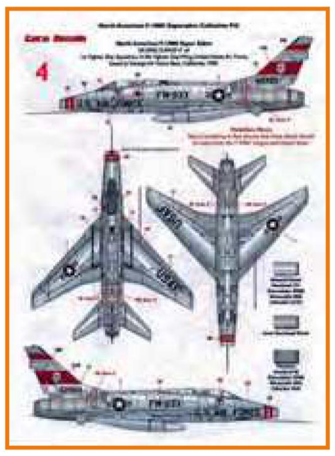
- F-100D 56-3151 with the 481st Tactical Fighter Squadron at Cannon AFB, New Mexico in 1959. There is a Green triangle on the tail fin and Green bands around the nose air intake.
- F-100D 56-3056 with the 524th Tactical Fighter Squadron, also at Cannon AFB in New Mexico in 1959. Rather than a Green flash on the tail fin, this F-100D carried a Yellow one.
- F-100D 55-2862 with the 454th Fighter Bomber Squadron at Bunker Hill AFB, Indiana in 1957. This Super Sabre carried a broad Blue band on the tail fin with a row of Black checkers top and bottom. This pattern is repeated around the nose.
- F-100D 56-2933 'Candi II' with the 1st Fighter Day Squadron at George AFB, California in 1959. There are two wide Red bands with a White border on the tail fin with a matching pair around the nose. Small 'Candi II' nose art appears below the canopy.

Those who build 1:48 models can expect to see an enlarged version of this sheet in the not too-distant future.

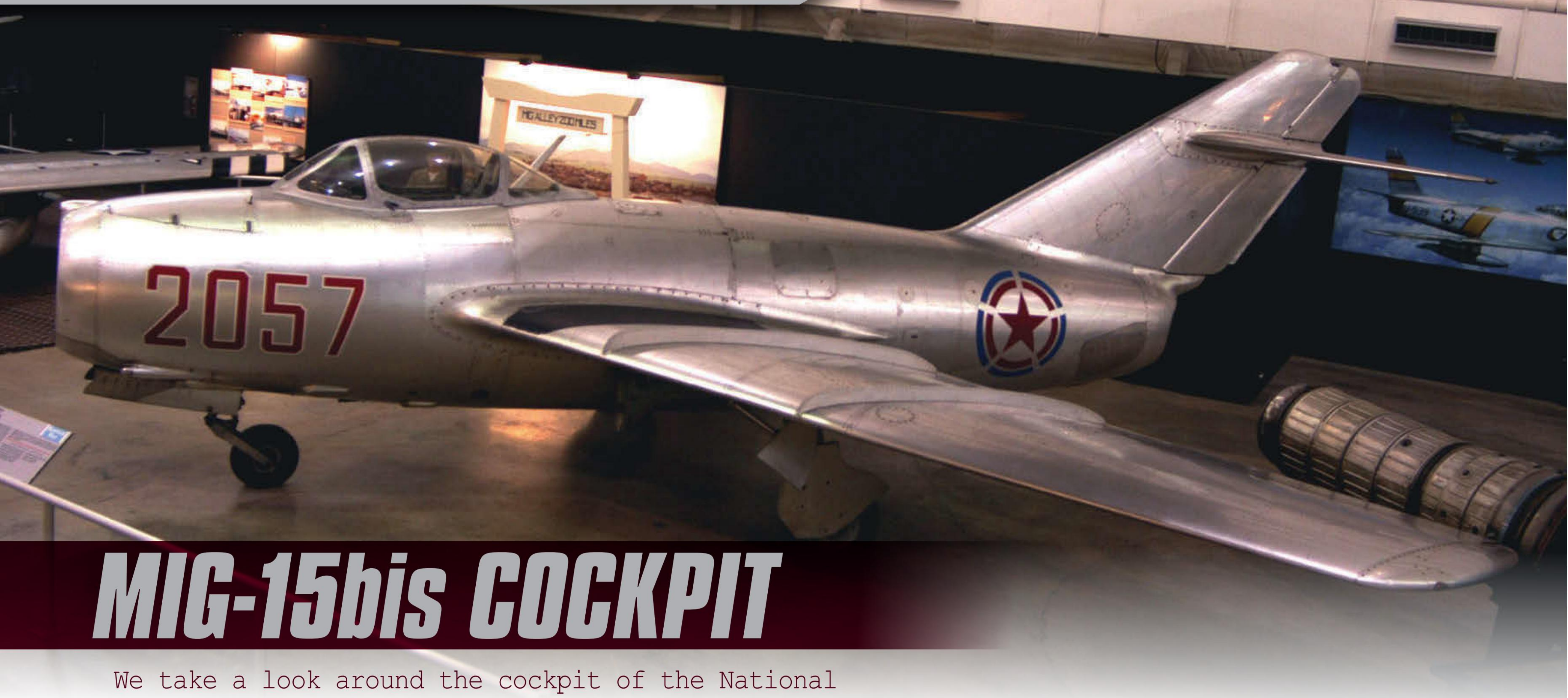








Thanks to Fantasy Printshop for their latest sheets for review.
See their website for details: fantasyprintshop.co.uk or phone 01208 77772.

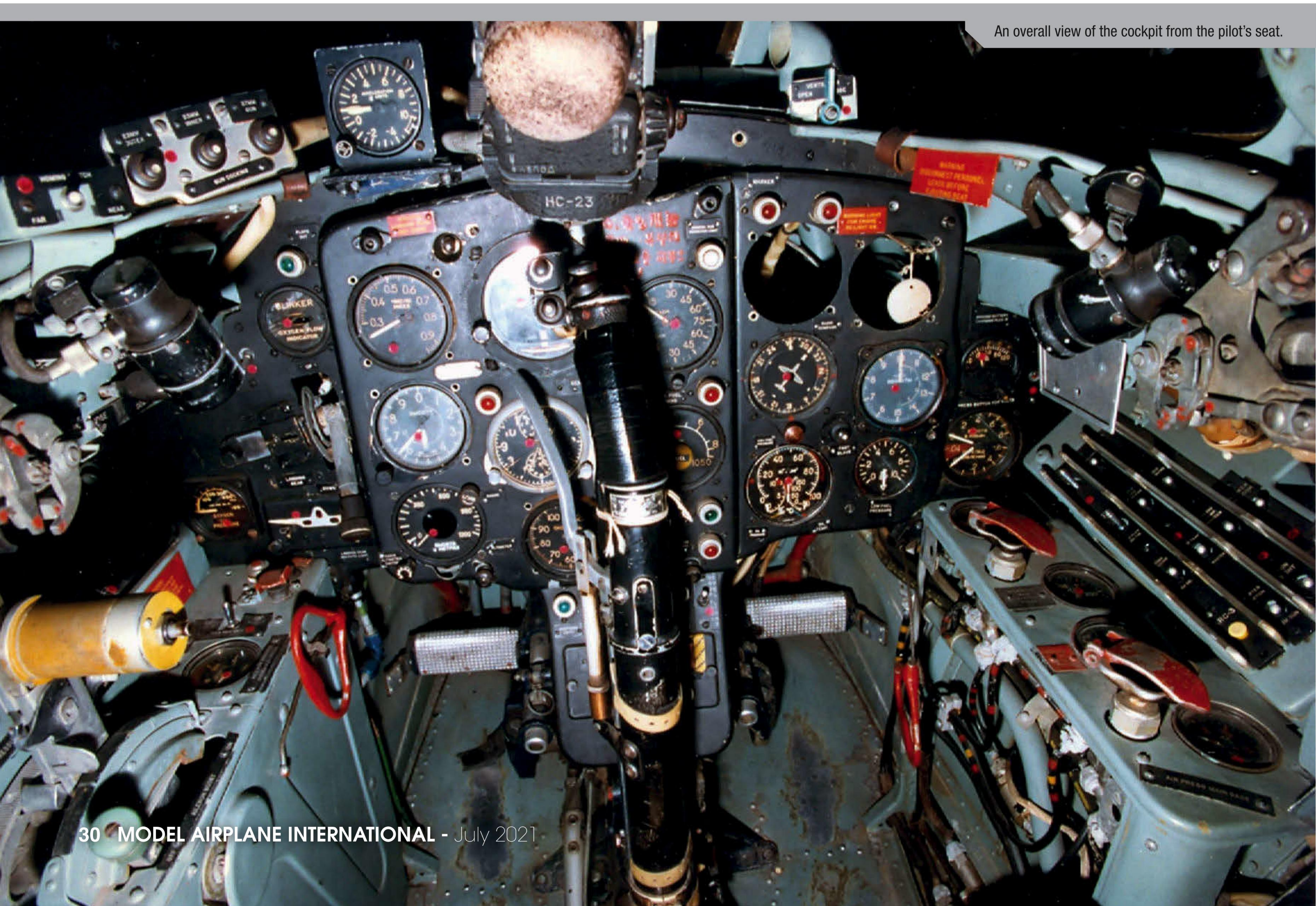


MiG-15bis COCKPIT

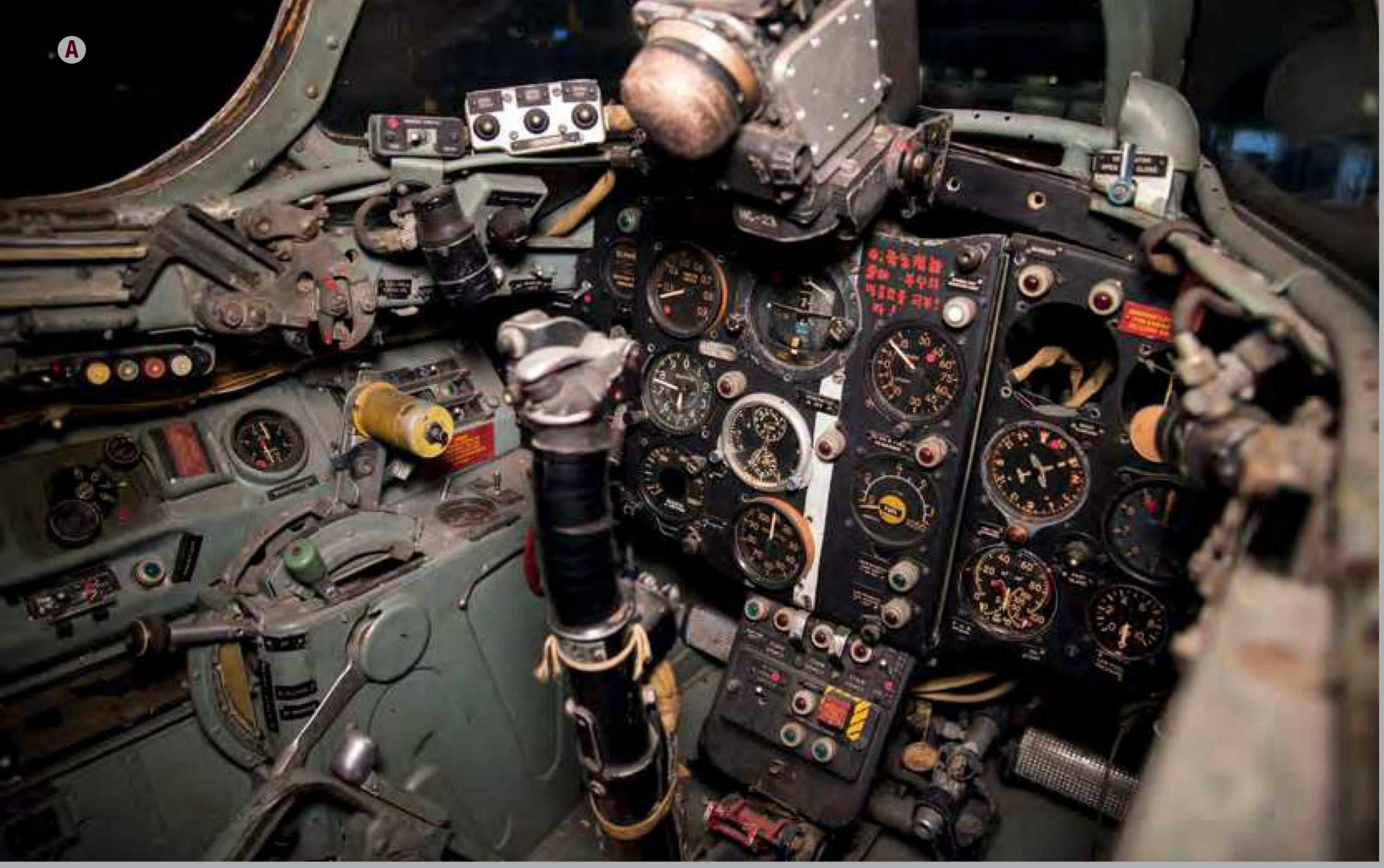
We take a look around the cockpit of the National Museum of the United States Air Force's MiG-15bis.

The Soviet Union developed the MiG-15 following World War II and the fighter entered service in 1949. By 1952 the Soviets provided the MiG-15 (NATO code name "Fagot") to a number of communist satellite nations, including North Korea. In 1950 the Soviets began production of a more capable version, the MiG-15bis. The MiG-15bis used a more powerful engine and hydraulically boosted ailerons. During the Korean War, both versions of the MiG-15 operated extensively against United Nations forces.

A defecting North Korean pilot flew the airplane on display to Kimpo Air Base in South Korea on Sept. 21, 1953. The aircraft provided important intelligence data, especially since it was the advanced version of the MiG-15. After considerable flight-testing, the U.S. offered to return the airplane to its "rightful owners." The offer was ignored, and in November 1957 it was transferred to the museum for public exhibition. ■



An overall view of the cockpit from the pilot's seat.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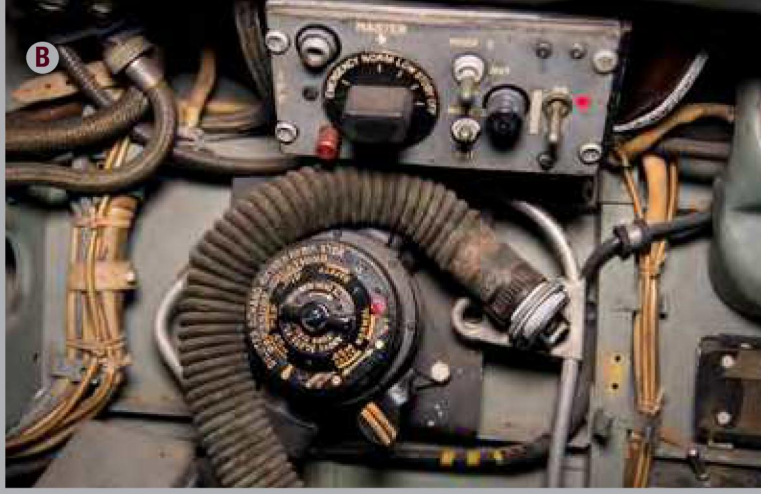
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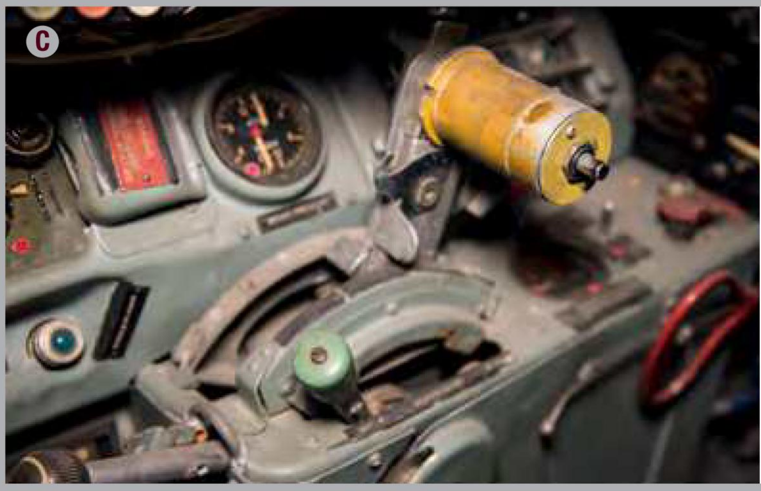
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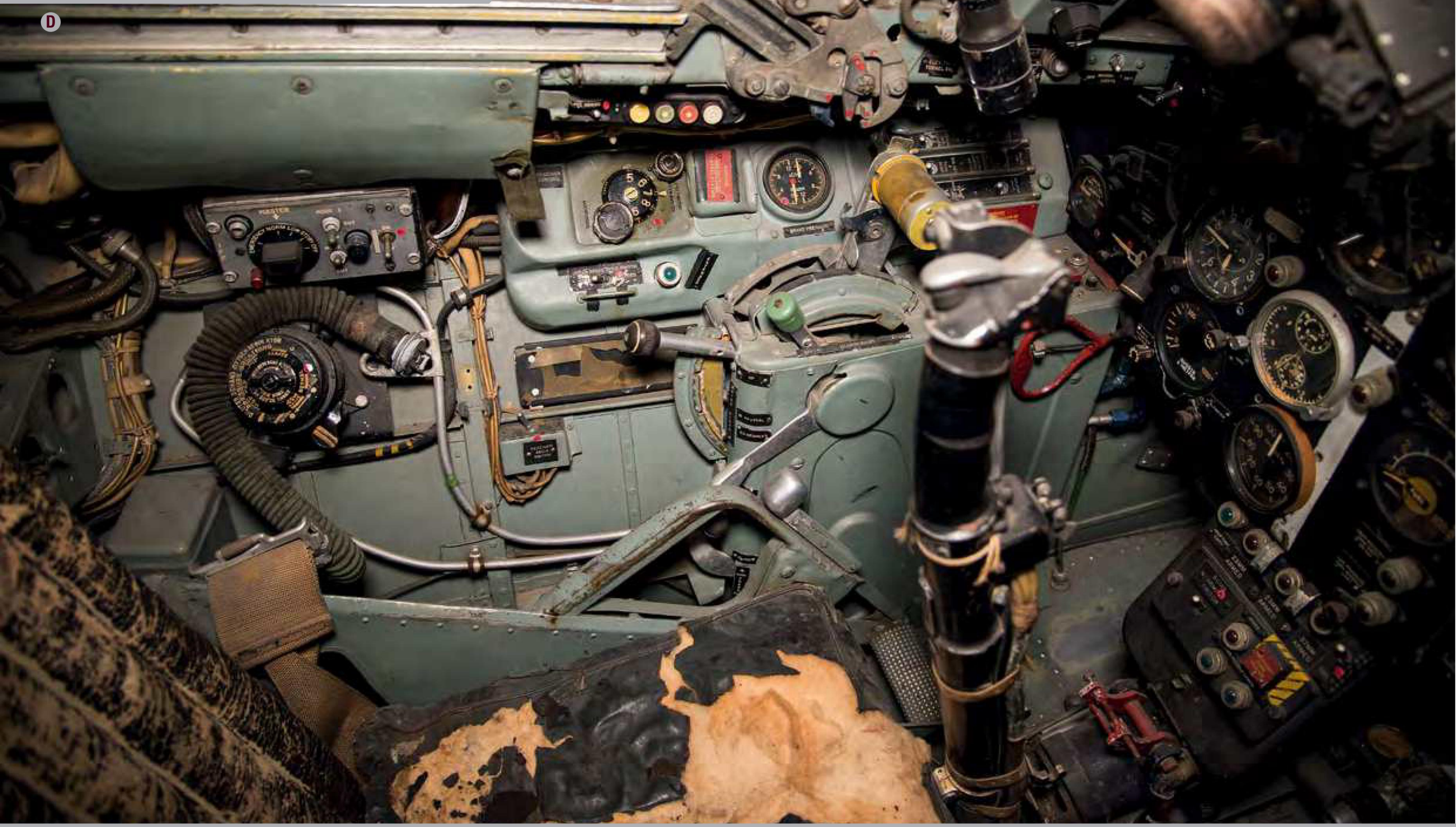
A. The side consoles follow the curves of the split intakes.
B. The oxygen regulator and associated equipment.
C. Throttle quadrant.
D. Port sidewall.
E. Right side view of the gunsight.
F. Detail view of instrument dials with the original Cyrillic lettering.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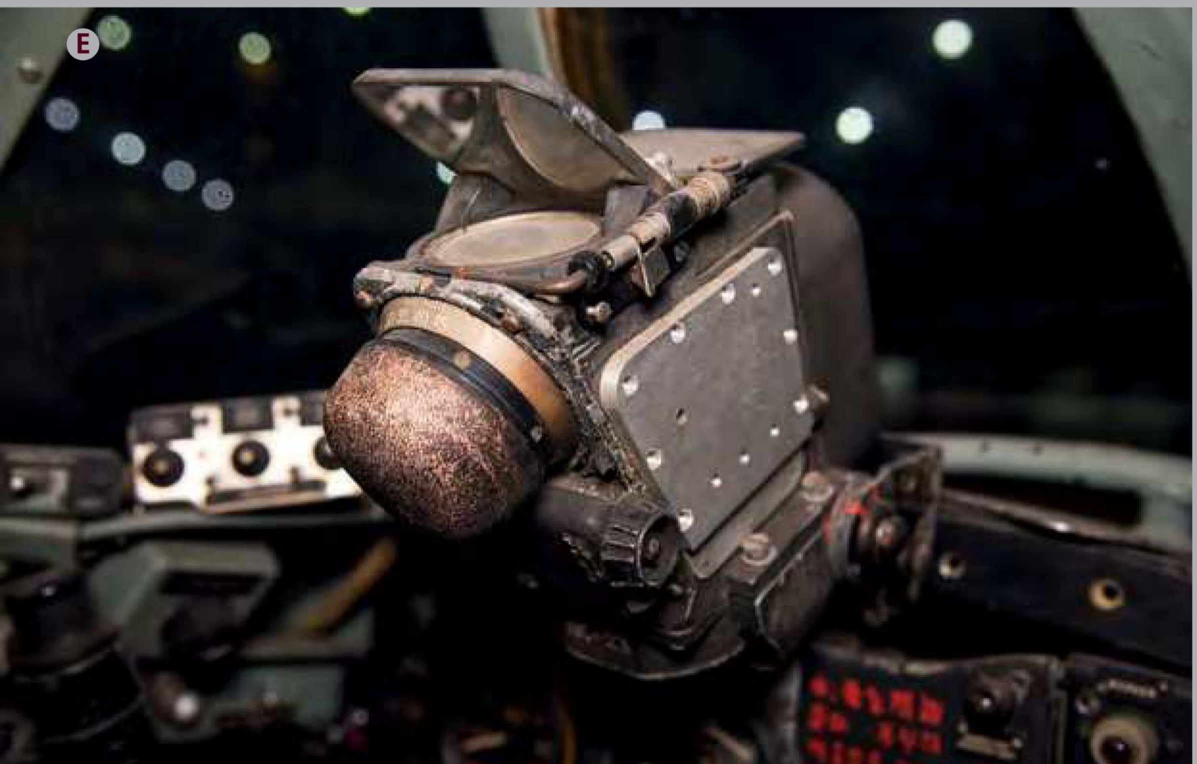
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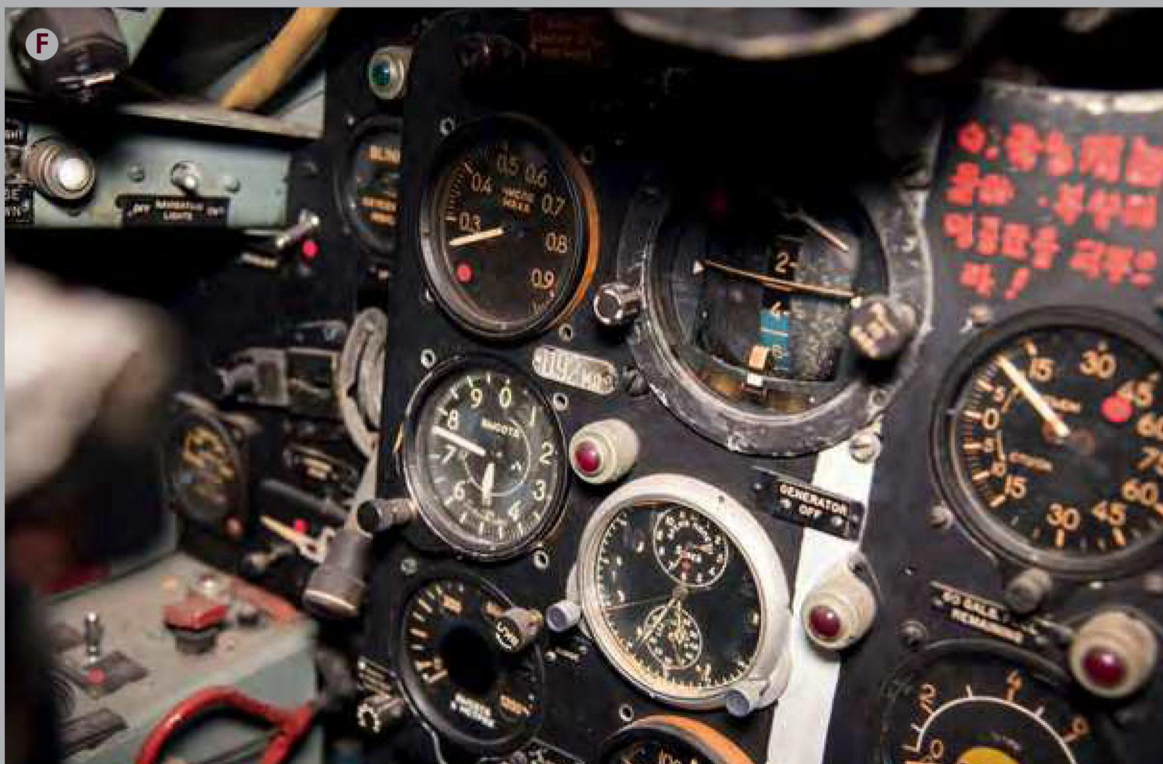
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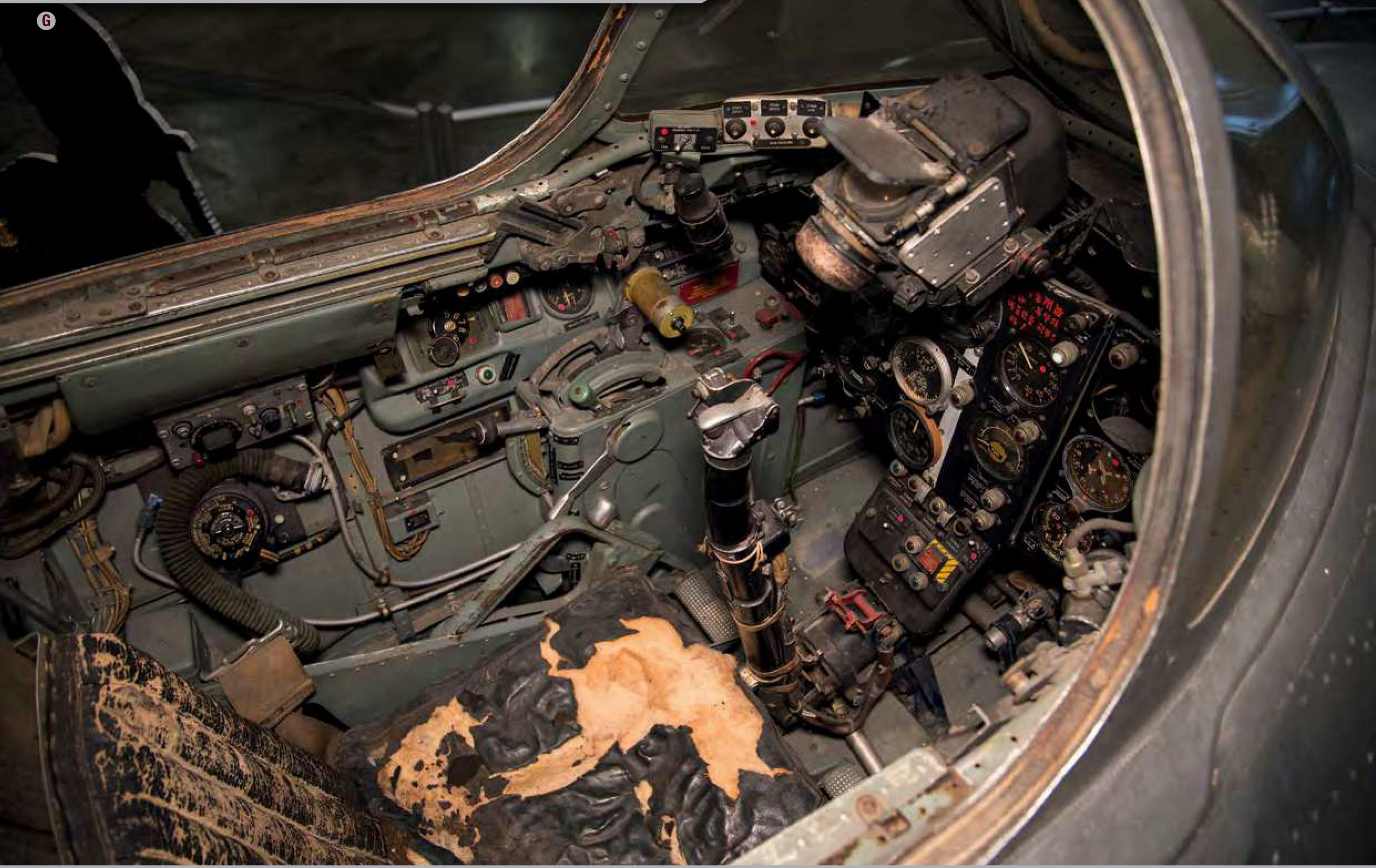

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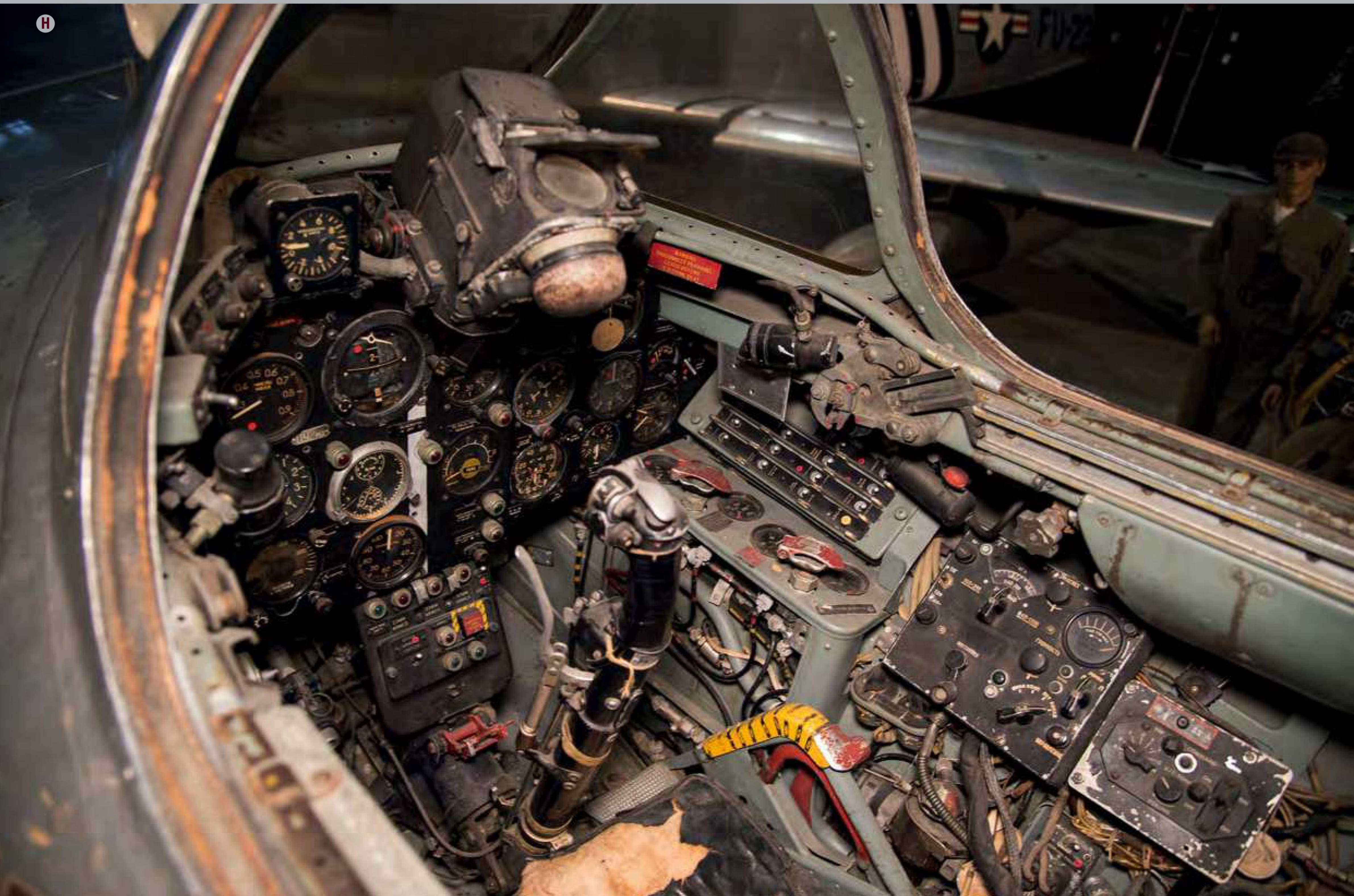
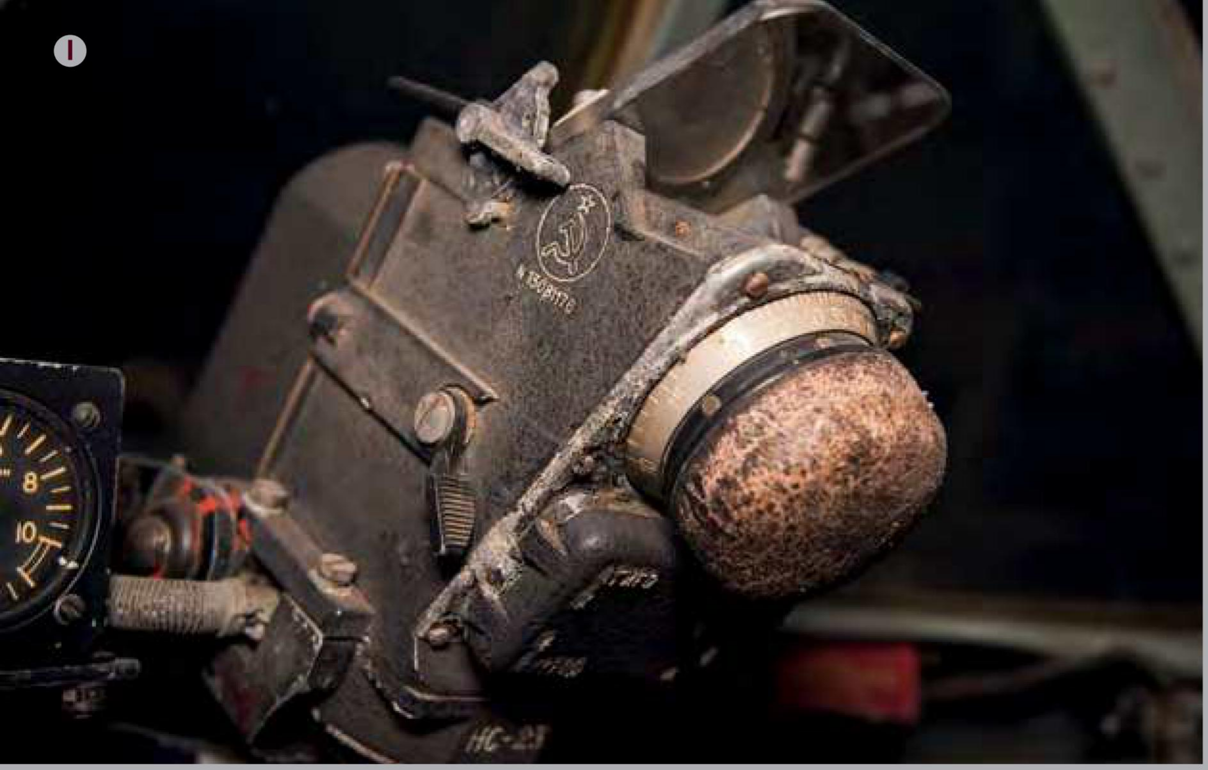
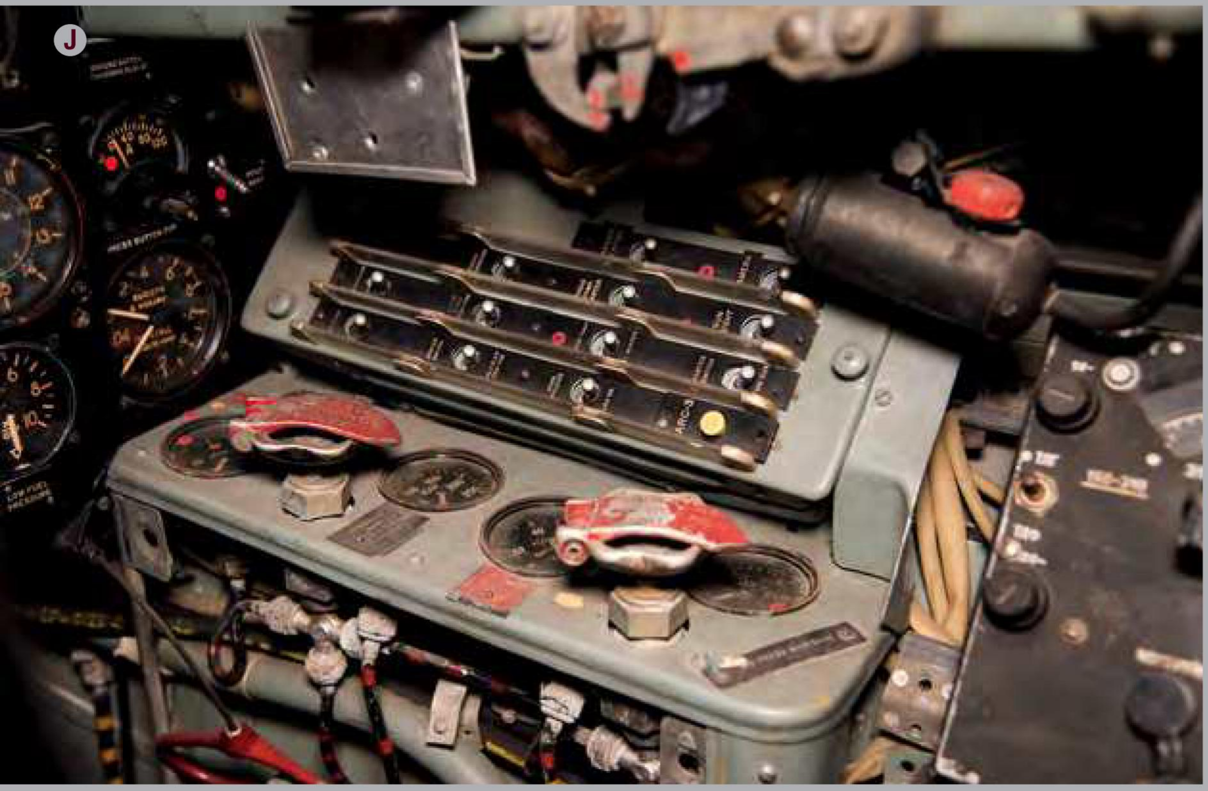
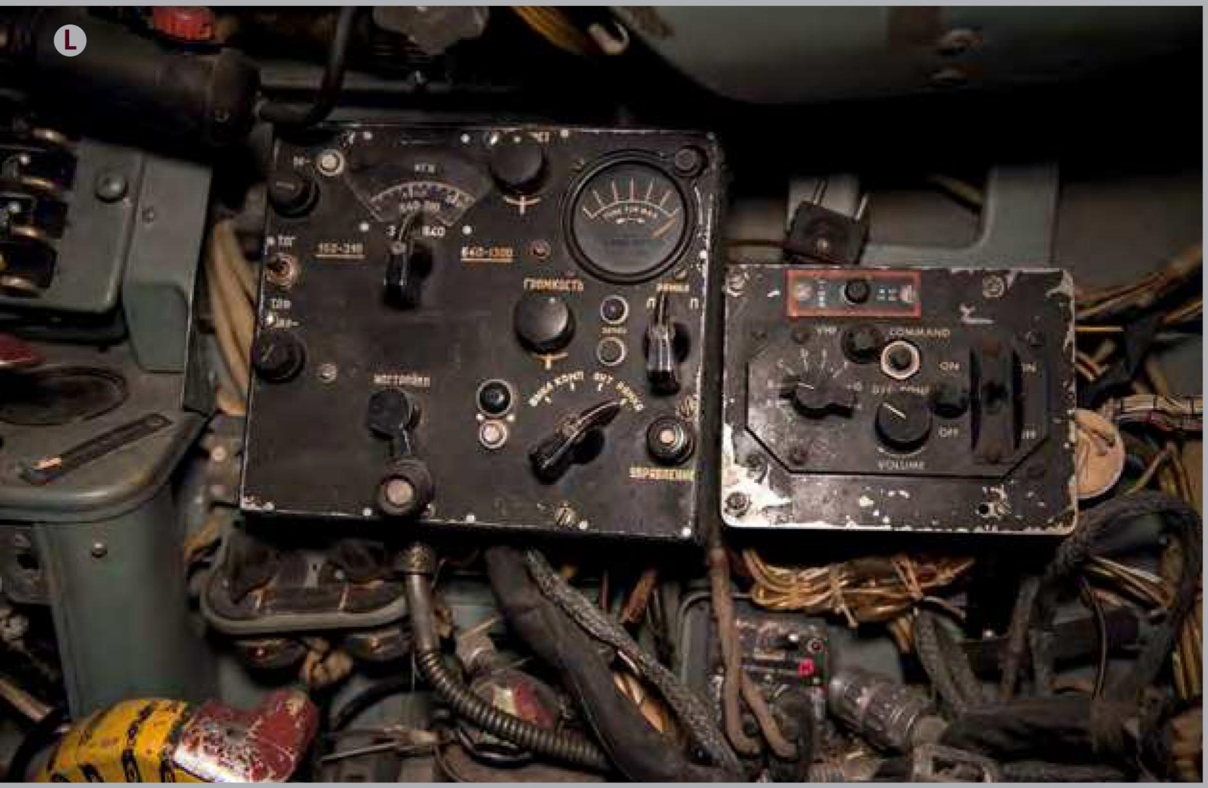
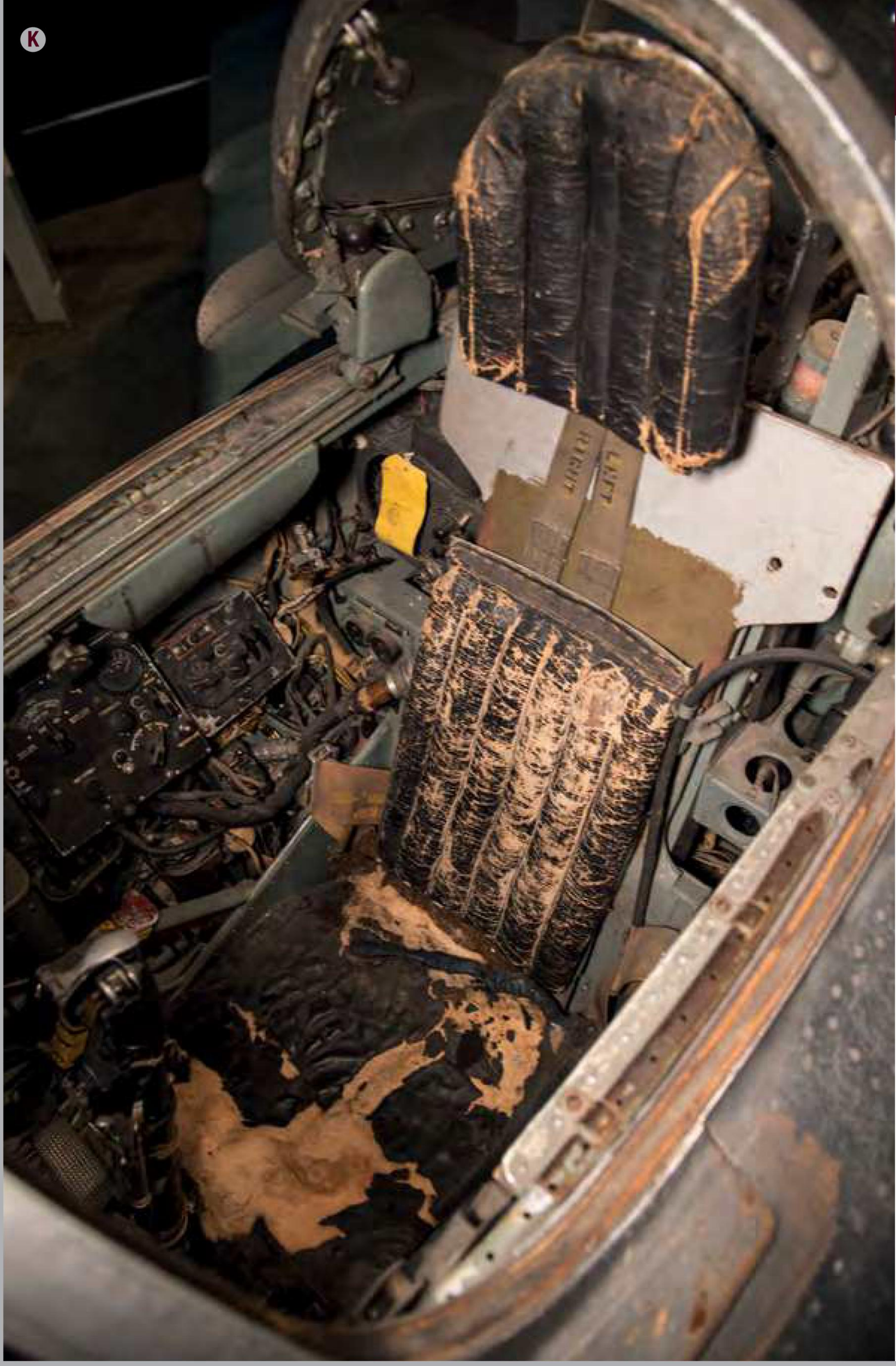


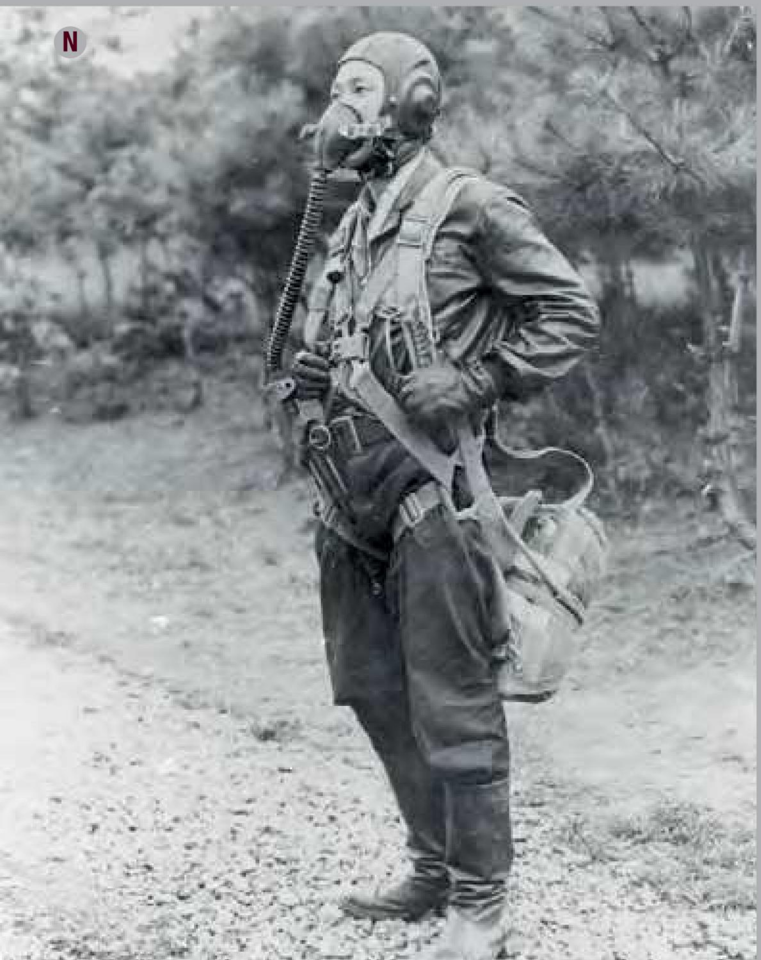


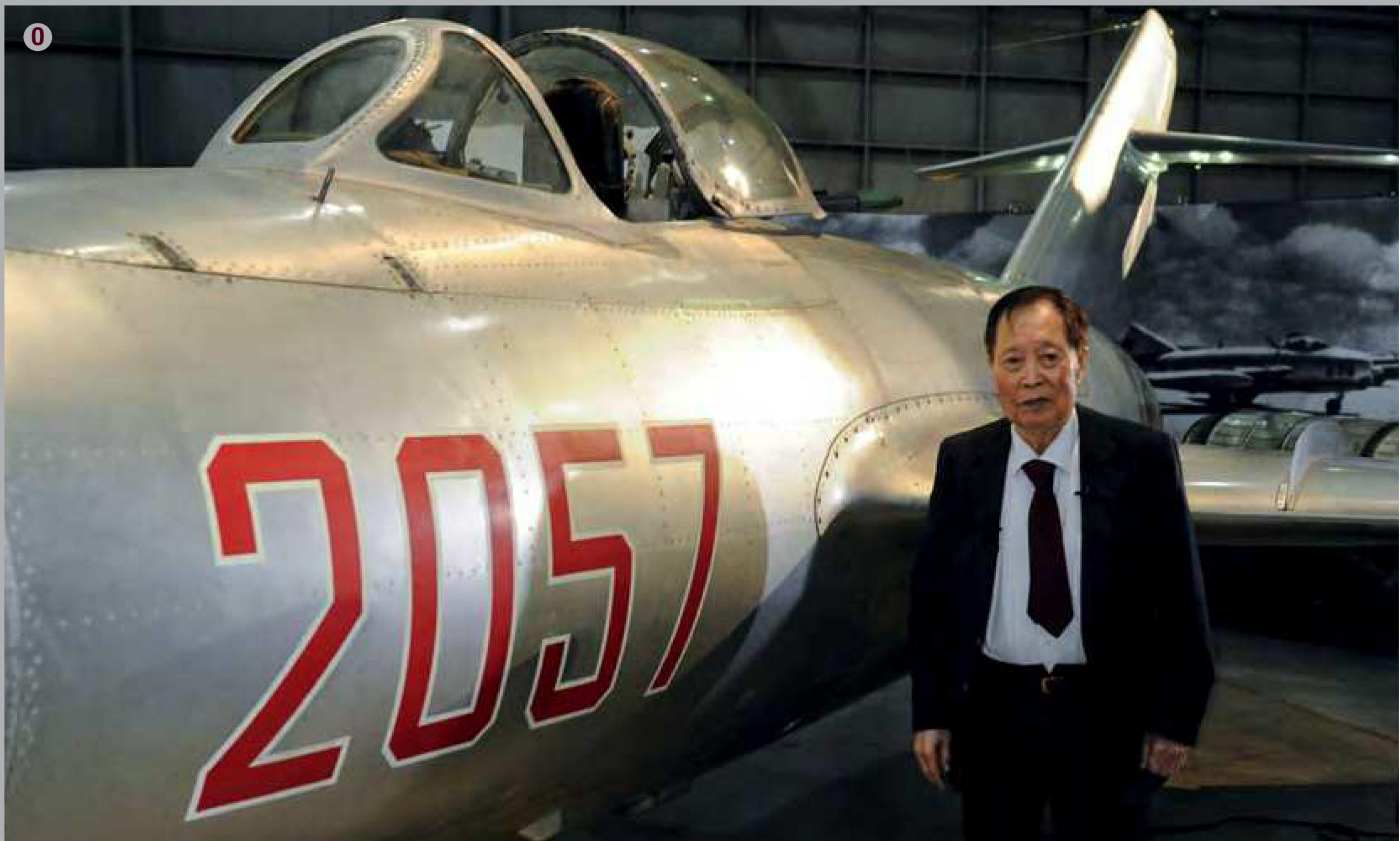






- **G.** A high view of the port side of the cockpit.
- **H.** The equivalent starboard view.
- **I.** Left side view of the gunsight. Note the padded leather cushion.
- **J.** Switch panel on the starboard side of the cockpit.
- **K.** Heavily distressed leather seat cushions.
- **L.** Soviet and American radios.
- **M.** Control column.
- **N.** Lt. No Kum-Sok in the flying clothing and equipment he wore on his flight to South Korea.
- **O.** No Kum-Sok with his MiG-15bis at the National Museum of the United States Air Force in 2019.





IN PRINT

The Norwegian Historic Flight's Vampires at RIAT Fairford in 2018. The single seat FB.52 (Mk.6) and twin seat T.55 (T.11) are beautifully finished in RAF No. 28 and IV Squadron colours respectively.

SAMPLES FOR REVIEW

Please send all items for review to the following address:
Model Airplane International, Doolittle Mill, Doolittle Lane,
Totternhoe, Bedfordshire, LU6 1QX, United Kingdom.
Companies in the European Union should also add our
VAT number, which is GB 789 7020 84

Short Stirling Mk I/III in RAF Service
Wingleader Photo Archive Number 7

- By Jonathan Falconer
- Published by Red Kite/Wingleader
- Guide Price £19.95
- ISBN: 978-1-908757-19-7
- 80pp softback, 210 x 297mm

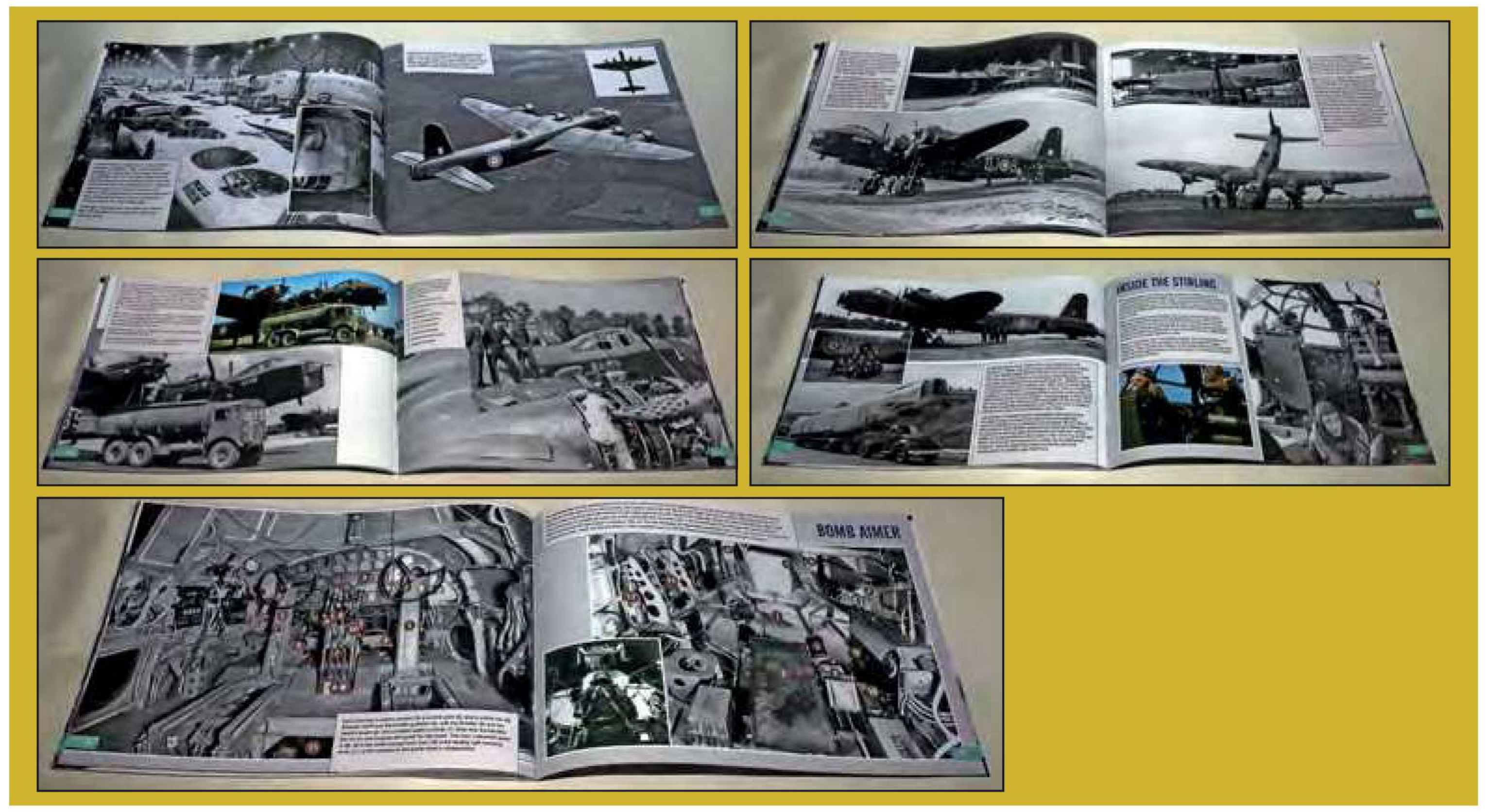
This is a subject that gets too little attention in the modelling world, the Short Sterling. By way of illustrating our point, a quick search on Hannants' web site for anything 'Short Sterling' produced nothing, not even a copy of the old Airfix 1:72 kit or the more recent Italeri version. Following on from the excellent No 6 in this series on the Spitfire Mk. V and the earlier Avro Lancaster profile, this book follows the same pattern.

Before opening the book, the first 'tick' is awarded to the A4 landscape format enabling the pictures to be reproduced as large as possible. It makes a such a difference, being able to have photos nearly 300mm wide rather than just over 200mm in an A4 portrait book. Artist's profiles can be printed to a good size, leaving space below for smaller plan views and captions. A long, thin aircraft such as the Sterling, illustrated in profile, fit this format very well.

The opening pages show the first mock-up and flying examples of the Sterling and we are immediately struck by the size of the aircraft. It is a long way from the underside of the nose to the ground. Manoeuvring around the airfield must have been like driving from the roof of a double decker bus plus another few feet. This book is filled with excellent photos of the Sterling, first in the factories and then around airfields. Most are in black and white but there are a few in colour as well as the excellent colour profiles. The colour profiles show the subtle changes to the Sterling's camouflage pattern. One interesting pair of pages shows a Sterling that crash-landed in German-occupied Holland and was repaired and test flown by the Luftwaffe. German insignia was applied and the underside painted Yellow, probably RLM 04 and the damaged nose covered to enable flight testing to take place with the minimum of work.

As in previous Photo Archives, we find much of the information useful to modellers in the captions accompanying the pictures. Small changes to the airframe around pointed out in the photos and captions. Some photos showing the assembly lines carry a wealth of information. One photo showing women fitting-out the inside of the fuselage shows how cavernous the Sterling's interior was. A section at the end of the book provides a series of photos showing the inside of the cockpit and workstations of other members of the crew. The Sterling was the only British built WWII bomber with dual controls with a spacious cockpit interior based on Short's Sunderland flying boat.

Throughout this book we find some useful close-up photos of undercarriage, gun turrets, aerials, the bomb bay and uncovered engines. We like the many photos showing air crew and ground crew servicing their aircraft between missions. Many of the photos look fresh enough to have been taken yesterday. All ideal for anyone with a Sterling build in mind or those with an interest in aircraft of WWII. It is a shame that kit manufacturers have not taken more notice of the Sterling bomber. A 1:48 kit would look spectacular on a table with other WWII aircraft models. These Photo Archives are printed with modellers in mind and come highly recommended.



Sukhoi Su-25
Frogfoot

- By Duke Hawkins with Marcus Fülber
- Published by H.M.H. Publications
- Guide Price £32.99
- ISBN: 978-2-931083-07-9
- 114pp softback, 240 x 240mm

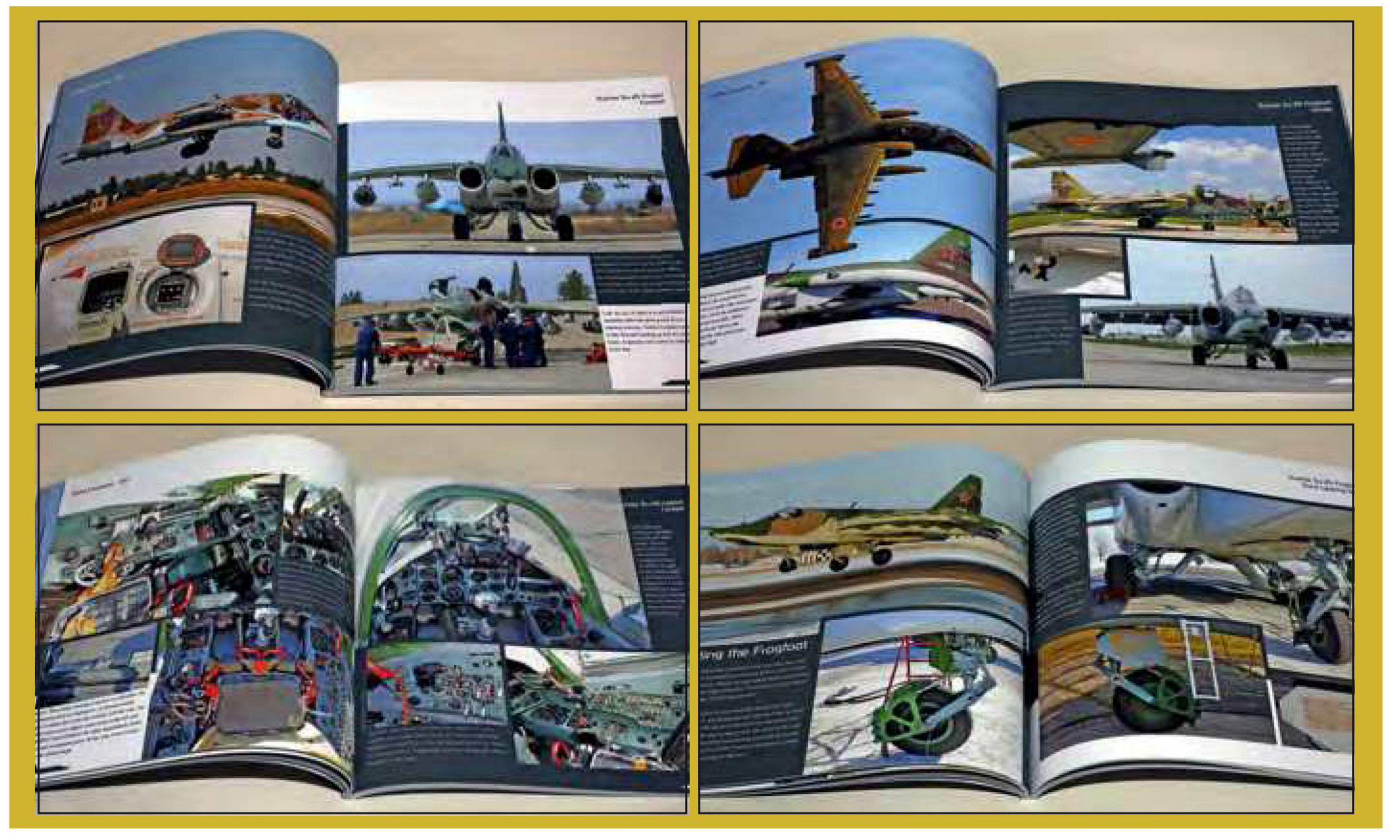
This is the seventeenth book from Duke Hawkins in only four years. His aircraft profiles are excellent and ideal companions to a build of a series of modern military aircraft kits. This profile on the Su-25 Frogfoot indicates that Duke and Marcus have managed some special access to the rugged Russian ground attack aircraft. Other Russian aircraft covered in this series are the MiG 29 Fulcrum and the MiG 31 Foxhound, both excellent modeller's reference books.

As ever, the first pages of this book feature a series of lovely general photos of the Frogfoot before moving on to area specific photos of the nose. Most of the pictures are of static aircraft with a few flying shots. What is striking amongst these pictures is the hugely varying levels of weathering. Some of the aircraft look factory-fresh but many are from the opposite end of the weathering spectrum, looking very second-hand. There is also a wide variety of camouflage schemes too. A few of the photos are of the two-seat version of the Su-57 and some on an aircraft carrier.

From the nose area, we are shown close-ups of the forward fuselage and then on to the air intakes and main fuselage. A selection of aircraft is shown with the Russian, Ukrainian and Bulgarian air forces. We then move on to the wings with a variety of ground close-up and some lovely flying shots where the weathering on the tops of the wings will be a challenge to reproduce. Next, there are almost twenty pages of cockpit interior and seat photos showing surprisingly spick and span cockpit interiors. Some show standard instruments and some with upgraded 'glass' instrument panels. I doubt you will find them in a kit just yet.

Much of the rest of this book consists of close-up pictures of firstly, undercarriage, including wheel wells and then Su-25s in the hangar being maintained. Those who would like to produce a super-detailed conversion will find plenty of excellent reference here with panels opened and engines removed. The concluding pages show Frogfoots in flight, landing with braking parachutes, weapons being loaded and flares being fired.

It is difficult to think of an alternative source of all of this information that we modellers crave. This is an outstanding book full of stunning photography, on quite an esoteric aircraft. It is a great shame that this aircraft has been given so little attention by kit manufacturers. When there is a steady stream of Flanker-variant kits, competing with each other, it would be good to see someone go for something different from Russia such as the Su-25.



De Havilland Vampire in
RAF and Overseas Service
Wingleader Photo Archive Number 8

- By Andrew Thomas
- Published by Red Kite/Wingleader
- Guide Price £19.95
- ISBN: 978-1-908757-18-0
- 80pp softback, 210 x 297mm

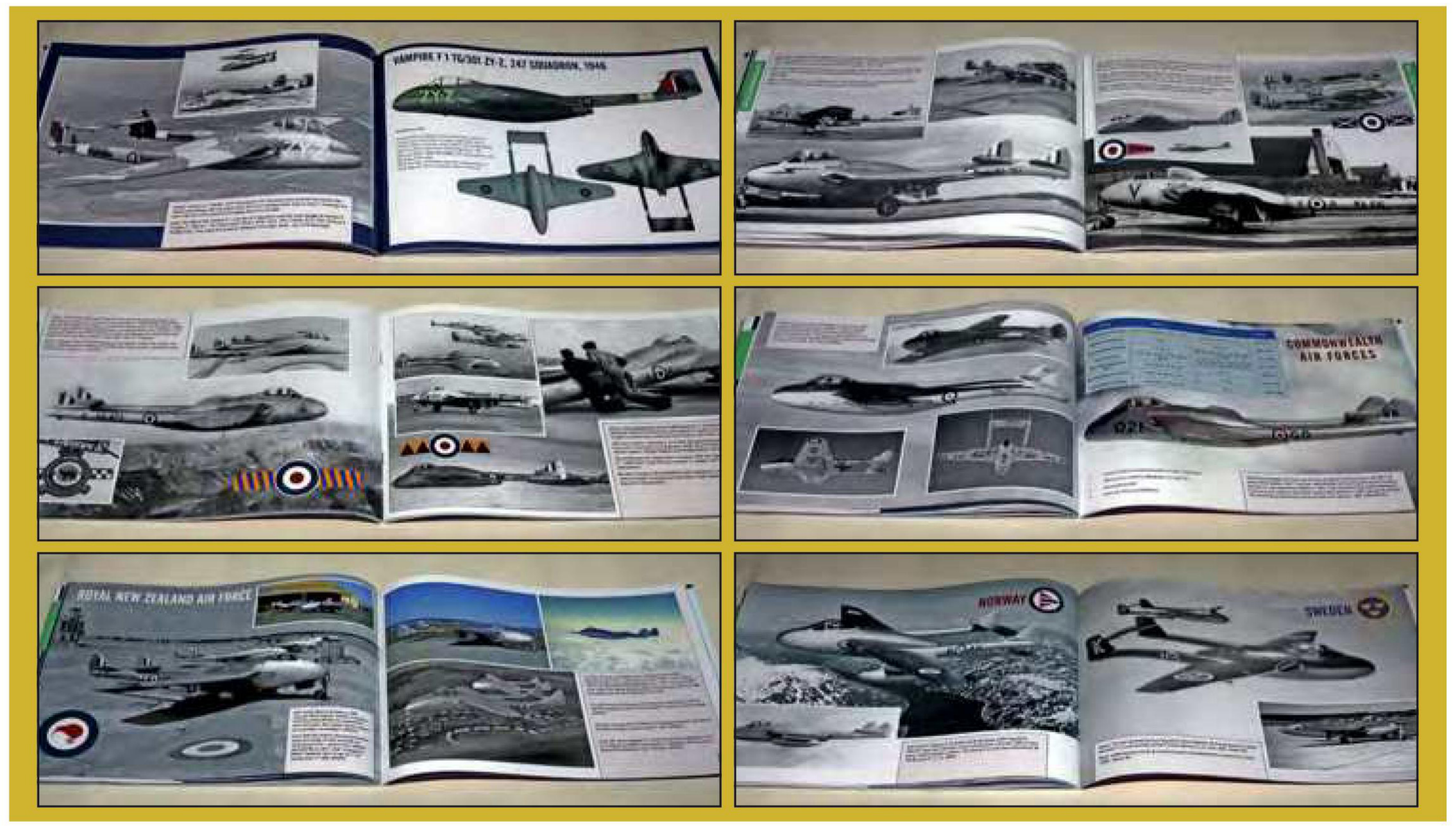
Arriving just in time to catch this issue is No. 8 in Wingleader's Photo Archive series, the first one to cover a jet subject and a type that didn't take part in WWII. The first flight of the Vampire, as it would later become known was in September 1943. At the time of its first flight this early jet fighter was to be named the Spider Crab, arguably one of the worst aircraft names ever thought of. By the time the third prototype flew, the much more pleasing name Vampire had been applied. One surprising fact is that in 1948 a slightly modified Vampire captured the world altitude record at 59,446 feet, a record that it would stand for five years until broken by a Canberra.

This series of books is aimed at us modellers and does not set out to be a set of technical publications. The Vampire's development is described in the first few pages, pointing out the cosmetic changes that took place to the design, especially around the design of the tail fins and the development of the two seat versions. This section ends with a good photo of the Vampire's no-frills cockpit interior. There is everything needed and nothing more.

Most of the rest of the book is filled with excellent old photos of Vampire operations with 3-view colour illustrations showing how Vampire schemes evolved. At first, the late war fighter colours of a pattern of Dark Green and Dark Sea Grey were applied to the upper surfaces with Medium Sea Grey undersides. As can be seen, the majority of Vampires in RAF service were to be finished in overall aluminium paint. Not natural metal, much of the body of the aircraft was made of wood. Between the publisher's and the author's photo collections, all of RAF squadrons that operated Vampires are shown with informative captions. These were the times of big, bold RAF squadron insignia with full colour roundels and many squadron insignia are shown in accompanying colour artwork.

Following the pages covering RAF units, we move to the few Vampire types that were used by the Royal Navy. A Vampire, in the hands of Lt. Eric 'Winkle' Brown was the first jet aircraft to land on an aircraft carrier at sea and of course, the first to take off, with room to spare, passing the carrier's island 20 feet in the air. The final 25 pages of this book looks at Vampire operations with export customers, firstly with Commonwealth nations and then with over 20 other countries. Even Japan used T.11s from 1956 to 1958. Irish Air Corps and Swiss Air Force Vampires would remain in service until the middle of the 1970s, remarkable for a 1940's design.

This another excellent addition to the Wingleader Photo Archive and will be very useful to anyone with a Vampire project in mind. Those building 1:72 models have a fairly wide choice, 1:48 modellers, less so but many will be looking forward to the arrival of the Airfix 1:48 F.3 this year. With the number of RAF squadrons and other nations flying the single seat F.3 we can hopefully look forward to a good supply of alternative decals too.



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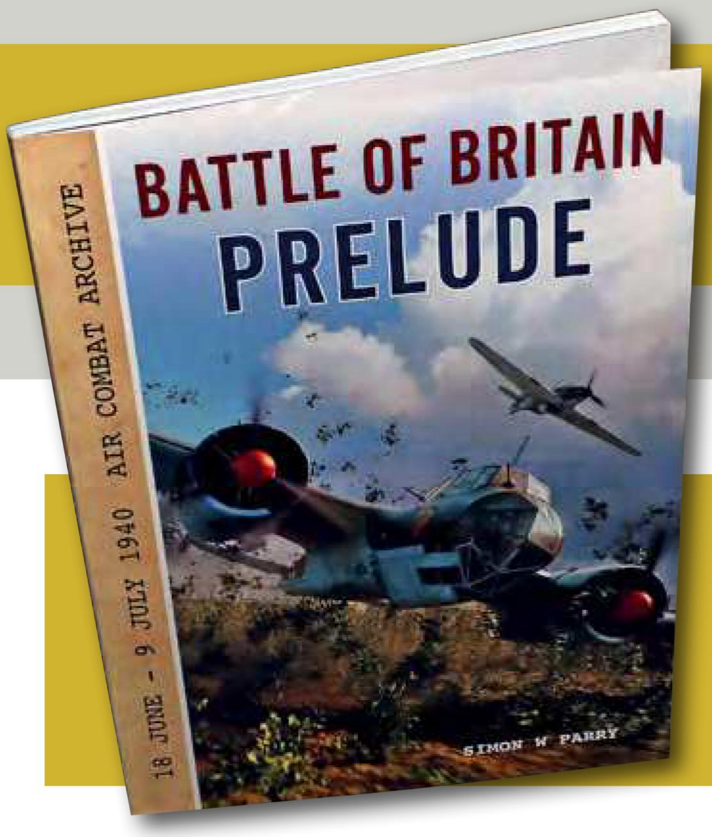


Battle of Britain
Prelude (18 June to 9 July 1940)

- By Simon W Parry
- Published by Red Kite/Wingleader
- Guide Price £25
- ISBN: 978-1-906592-77-6
- 112pp, softback, 297 x 210mm

This book fills the gap between Dunkirk and the start of the war in the air we all know as the Battle of Britain. Air activity was seamless as the war between Britain and Germany gathered pace as the Germans aimed to neutralise Britain's air defences prior to launching an invasion across the English Channel. Many books have been published on the Battle of Britain but we think we are correct in saying that the time between the Dunkirk evacuation and the first day of the Battle of Britain, very little has been seen in print, especially to the level of detail in this book and the two previous volumes from Red Kite covering Dunkirk and the beginning of the Battle of Britain.

The cover artwork is stunning, showing the last moments of a Dornier 17 as it crashes into a hop field in Kent on 3rd July 1940 brought down by two Hurricanes of No. 32 Squadron. Page 3, The Introduction, shows a photo of Winston Churchill and the final part of his 'Finest Hour' speech given on the afternoon of 18th June in the House of Commons. As his rousing speech was being delivered, over the sea, the Luftwaffe was preparing to launch large raids during that night.

Following the surrender of France on the 22nd June 1940, the Germans were able to concentrate all their efforts towards the destruction of the RAF. The first day described in this volume, 18th June was the final day of RAF flying from bases in France and the actions described here begin with the night of 18th/19th June. In the last book, 'Dunkirk to the Fall of France', the final evacuation of British personnel and equipment from France is described in the book's final pages covering the daylight hours of 18th June.

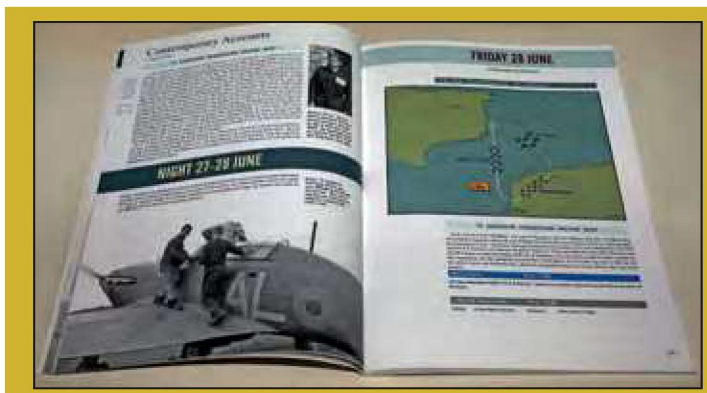
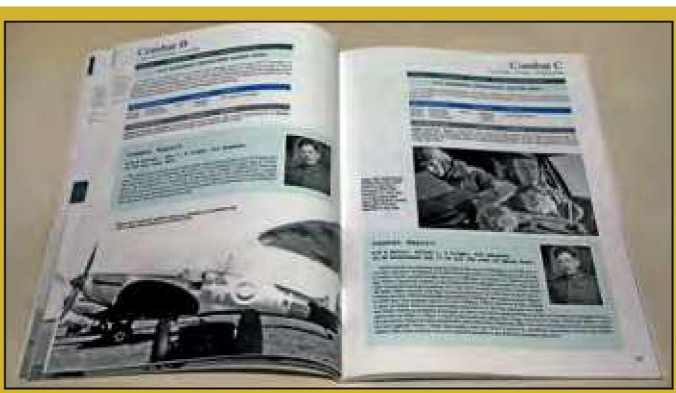
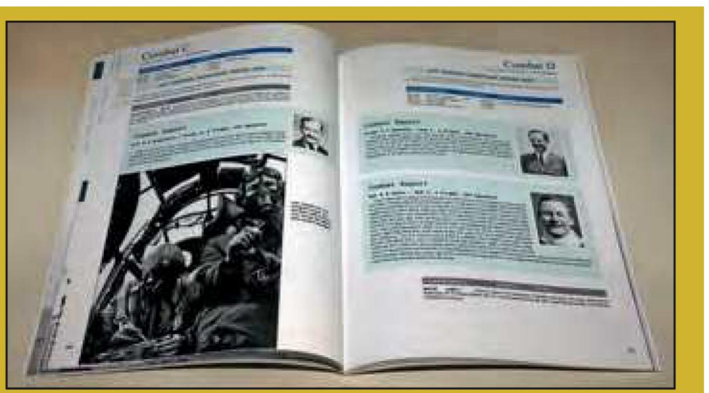
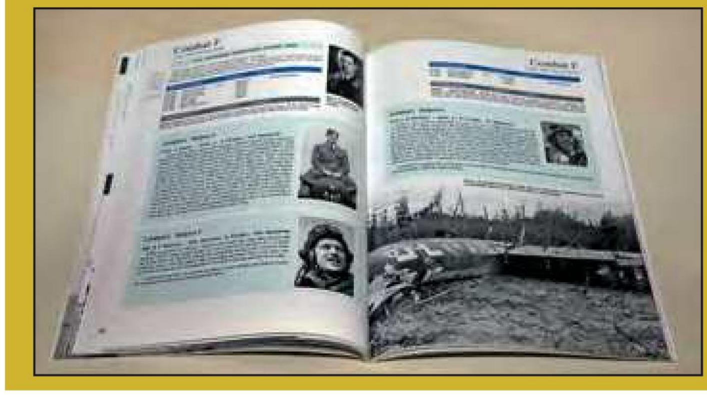
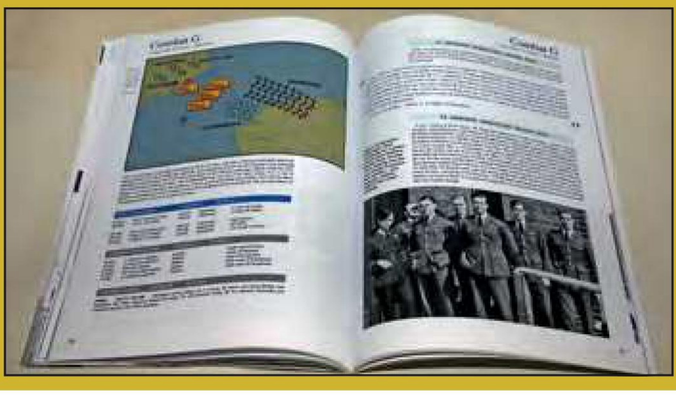
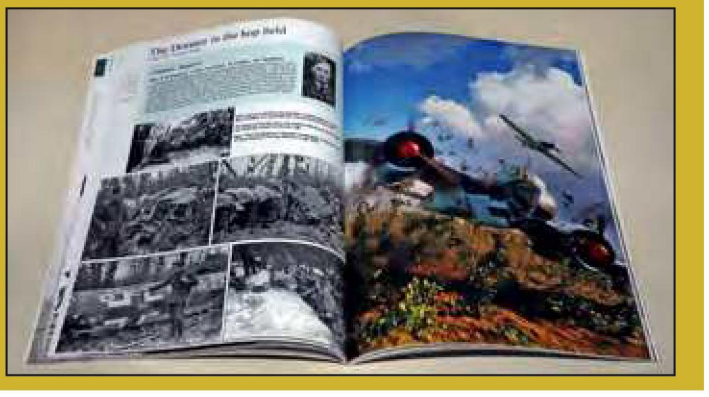
Between 23.00 on the 18th and 03.00 on the 19th and estimated 120 Luftwaffe aircraft took part in attacks on mainly targets in eastern counties. Several towns were bombed amongst them, Cambridge where eight houses were destroyed. Eleven He 111s were claimed, seven confirmed and three possibles. RAF losses were three Blenheims and one Spitfire. Pilot's combat reports are reproduced and all of the crews lost on that night, on both sides are named and whether they survived or died in the action.

Early the following morning a patrol was sent to known German airfields in northern France to gather information. As a result, an attacking force of Blenheims, escorted by fighters flew to France to attack German aircraft parked on the airfields. The following night, approximately 150 German aircraft took part in raids on towns from Dundee in the north to Weymouth on the south coast. Four of the raiders were shot down by the RAF with no RAF casualties. Again, extracts from squadron operational record books and pilot's combat reports describe the action. June 22nd is significant as with the French surrender, the Luftwaffe is free to concentrate its attacks against the UK mainland and shipping.

This book continues in the same pattern. Many day's action is shown on maps, plainly the dark maps describe night-time activities. Many pages show photos of the aircraft, some crash sites and photos of the pilots involved. Some of the busy days occupy as many as a dozen pages. At intervals throughout the book we see colour profiles of some of the British and German aircraft taking part in the action and superb full size A4 artwork by Piotr Korkasiewicz such as the one on the front cover. Action taking place in the evening of 9th July concludes this volume. Volume 1 of the Battle of Britain Combat Archive continues the history of fighting in the air in the summer of 1940 with the 10th July. At the time of writing, nine volumes of the BoB Combat Archive have been published, taking the story on to 3rd September.

A superb history of the Battle of Britain is nearing its conclusion and comes highly recommended as does this volume that fills the gap between Dunkirk and the start of the Battle of Britain. Those who have not seen any of these Red Kite books are missing a treat. The earlier volumes are still available for anyone wishing to catch up on the complete set. Look for the wingleader.co.uk web site or Avid Reader/bookworldws.co.uk who are the UK distributor of the Red Kite range. If you are interested in this short period of WWII, one look at a copy and you could be hooked.

Thanks once again for these recent Red Kite/Wingleader books supplied for review. See wingleader.co.uk for ordering or specialist traders such as Avid Reader/Bookworld Wholesale for availability (bookworldws.co.uk).

Duke Hawkins
Dassault/Dornier
Alpha Jet
Flying with Air Forces around the World

Dassault/Dornier Alpha Jet

- By Duke Hawkins
- Published by H.M.H. Publications
- Guide Price £22.99
- ISBN: 978-2-931083-08-6
- 116pp softback, 240 x 240mm

Following on the heels of the Su-25 profile, we turn to the latest Duke Hawkins book, number 018, on the Alpha Jet, the go-to fast jet trainer with many air forces, particularly those in Europe.

When we first receive a book for review, obviously the first flick through the pages provides a snap-shot of what we look at in detail later. What caught our eye immediately was the number of superb special schemes on Alpha Jets. It makes the perfect canvass for commemorative and display team colours.

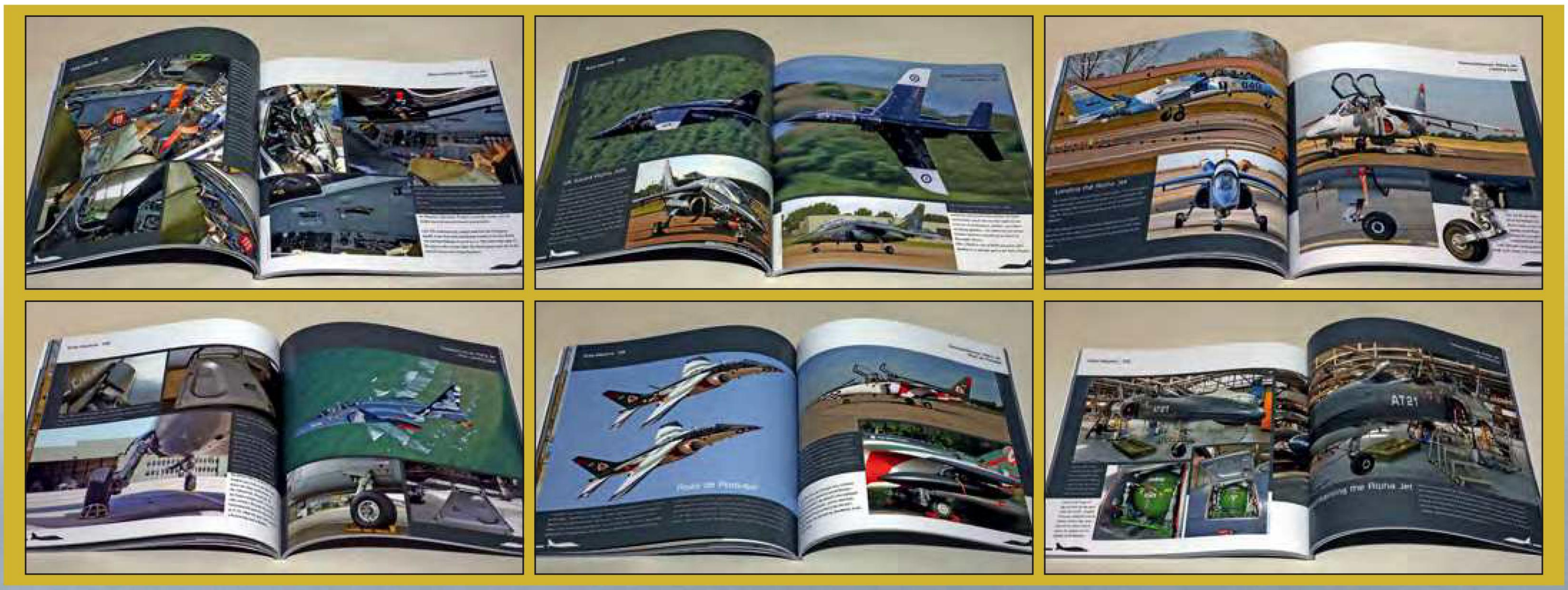
This book follows the same pattern as the Su-25 reviewed earlier with each page covered in stunning photos, sharp enough to cut bare skin. Many general static and flying shots are supplemented with close-up of parts of the plane. As ever, the cockpit interior photos are superb. It is interesting to see a cockpit instrument panel in the early Alpha Jets that would look quite at home in a WWII fighter. More recent Alpha Jets now have some 'glass' displays that prepare trainee pilots for the instruments that they will use when moved on to modern jet fighters. The cockpit section concludes with a page of great seat photos showing the Martin-Baker Mk.10. Replicating the mass of harness shown in the photos is neigh-on impossible on a kit seat.

Next is a section showing Alpha Jets in the hands of civilian contractors. A pair of pages shows the aircraft owned by QuinetiQ operating out of Boscombe Down for a few years. Their aircraft have since been passed on with some going to Canadian contractor, Top Aces who have since applied some stunning camouflage schemes shown on the following pages.

Then we see more stunning flying Alpha Jets and great reference photos of the undercarriage and wheel wells. All you could possibly need when building a kit. An eighteen-page section shows Alpha Jets undergoing deep servicing with panels opened and engines removed. Again, a super-detailer's delight. All good things come to an end and this book concludes with yet more excellent Alpha Jet photos showing off some great paintwork.

This book is another excellent addition to the lengthening list of modern military aircraft profiles. Whether just an enthusiast or a modeller looking for the one-stop reference book, they are very, very good.

Thanks to Avid Reader/Bookworld Wholesale for supplying the Red Kite and Duke Hawkins books for review this month. Check their web site bookworldws.co.uk for availability and ordering.



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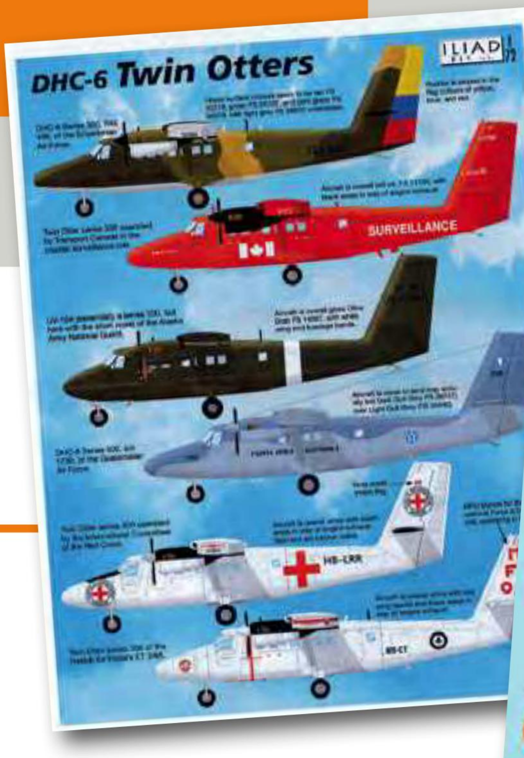
TRANSFER LIST

Written by Alan Firbank.


DHC-6 Twin Otters
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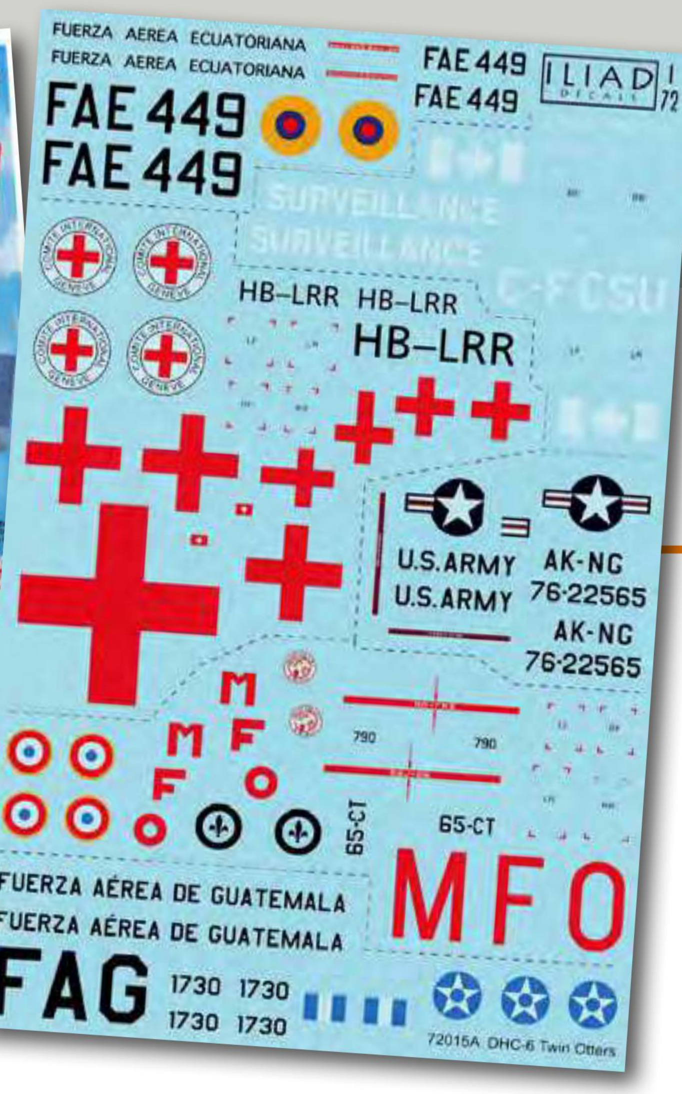
SURVEILLANCE
HB-LRR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FUERZA AÉREA DE GUATEMALA
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1730
72015A DHC-6 Twin Otters

ILIAD DESIGN DECALS

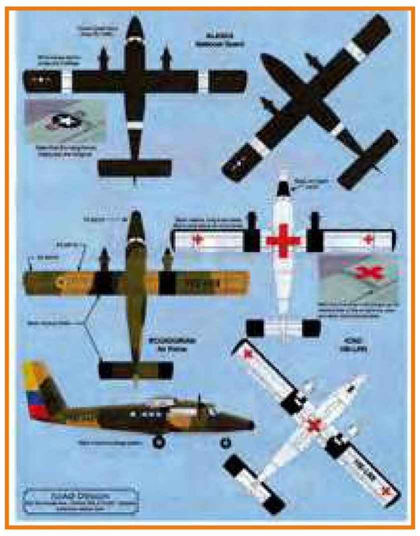
This month we have two great new decal sheets from Canadian decal producer, Iliad Design. For the first sheet you will be looking for Revell's 1:72 colourful Twin Otter kit but the 1:72 C-47, subject of the second sheet is available from several of the main kit manufacturers.

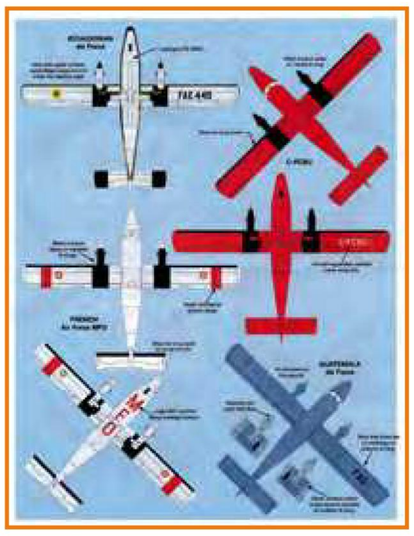
DE HAVILLAND CANADA DHC-6 TWIN OTTER (SHEET NO. 72015A)

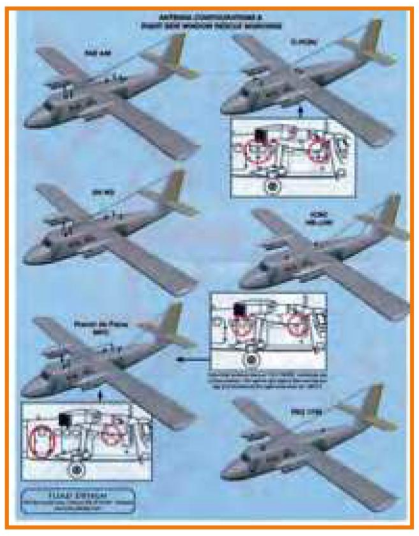
We first reviewed this popular sheet back in 2016 and it is now back again with one more Twin Otter added, the final scheme on the list below. Each scheme comes with its own set of national markings.

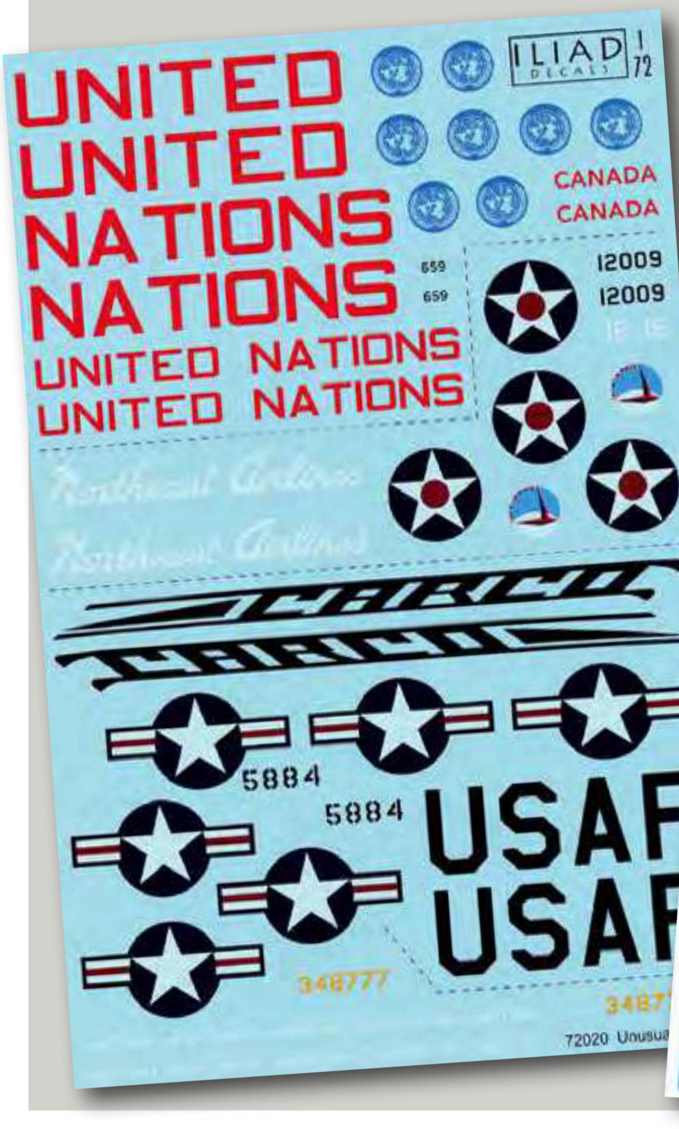
- DHC-6 Series 300, FAE 449 with the Ecuadorian Air Force in September 1994. This aircraft was lost in an accident in January 2011. This aircraft carried a camouflage pattern in the USAF's SE Asia camouflage colours of Dark Green FS34102, Forest Green FS34079 and Tan FS30219 on the upper surfaces and Light Grey FS36622 on the undersides.
- Twin Otter Series 300 operated by Transport Canada for coastal pollution monitoring duties c. 2006-07. The Twin Otter was painted overall Red FS11105 with black engines and wing leading edges.
- UV-18A (a Series 300 with a short nose) 76-22565 operated by the Alaska Army National Guard in 1979. This aircraft was painted overall gloss Olive Drab with white bands on the fuselage and around the wings.
- Twin Otter Series 300 65-CT with the French Air Force. This Twin Otter carried an overall white paint scheme with red bands on the wings, black engines and wing panels aft of the engines. The letters MFO appear in large red characters on the fuselage underside as well as on the tail fin.
- Twin Otter Series 300 HB-LRR operated by the International Red Cross in a white scheme similar to the above and Swiss civil registration.
- Twin Otter DHC-6 Series 400, 1730 with the Guatemalan Air Force. The upper surfaces are painted Dark Gull Grey (FS36231) and the undersides Light Gull Grey (FS36440).

The instructions with these decals are worth a mention for the detail given on colours and diagrams showing the differing antenna wire configurations.





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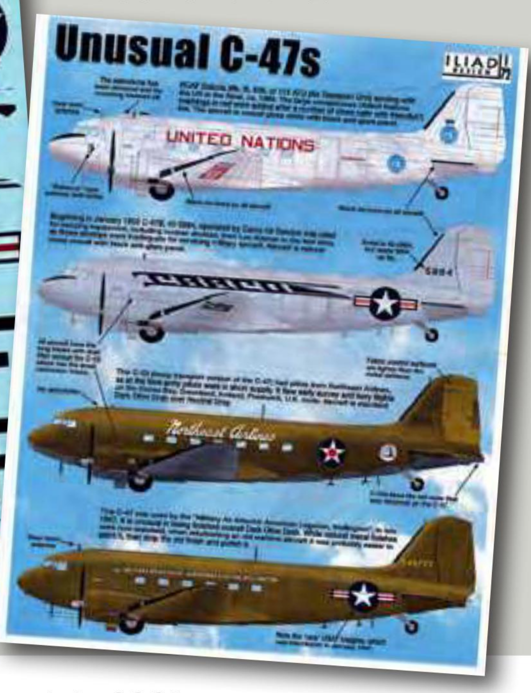
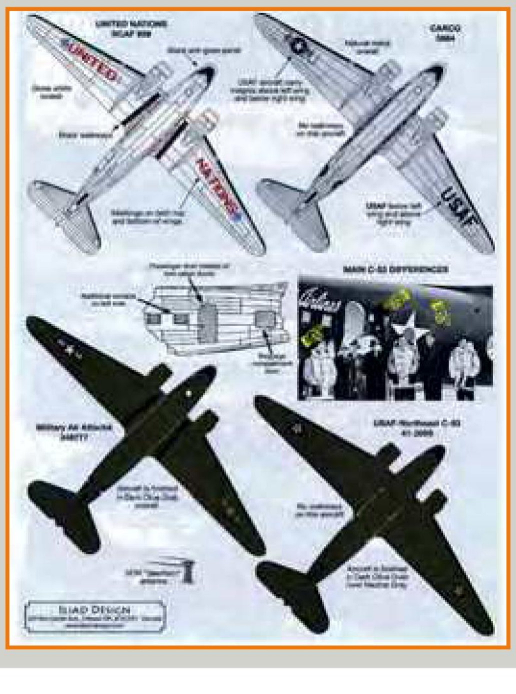
UNUSUAL C-47S (SHEET NO. 72020)

Four sets of markings for various versions of what we commonly refer to as the Douglas Dakotas.

- Dakota Mk. III 659 with the RCAF in United Nations colours when serving in the Sinai around 1960. The scheme is the usual UN colour of overall White.
- C-47B 45-0884 when operated by Carco Air Services but with USAF insignia when doing contract work for the air force at the Los Alamos range. The scheme was overall natural metal.
- C-53 12009 in the colours of Northeast Airlines but with US insignia and in the familiar Oliver Drab over Neutral Gray colour scheme. The aircraft was used for survey work and ferry flights between Goose Bay and Prestwick.
- C-47 348777 in the markings of the "Military Air Attaché: American Legation, Wellington" in late 1947. The scheme was overall Dark Olive Drab.


Unusual C-47s
ILIAD 1/72
UNITED NATIONS
CARCO
Northeast Airlines

All the necessary insignia is supplied so that all four Dakotas can be produced from this sheet. Iliad's decal sheets are available direct via www.iliad-design.com

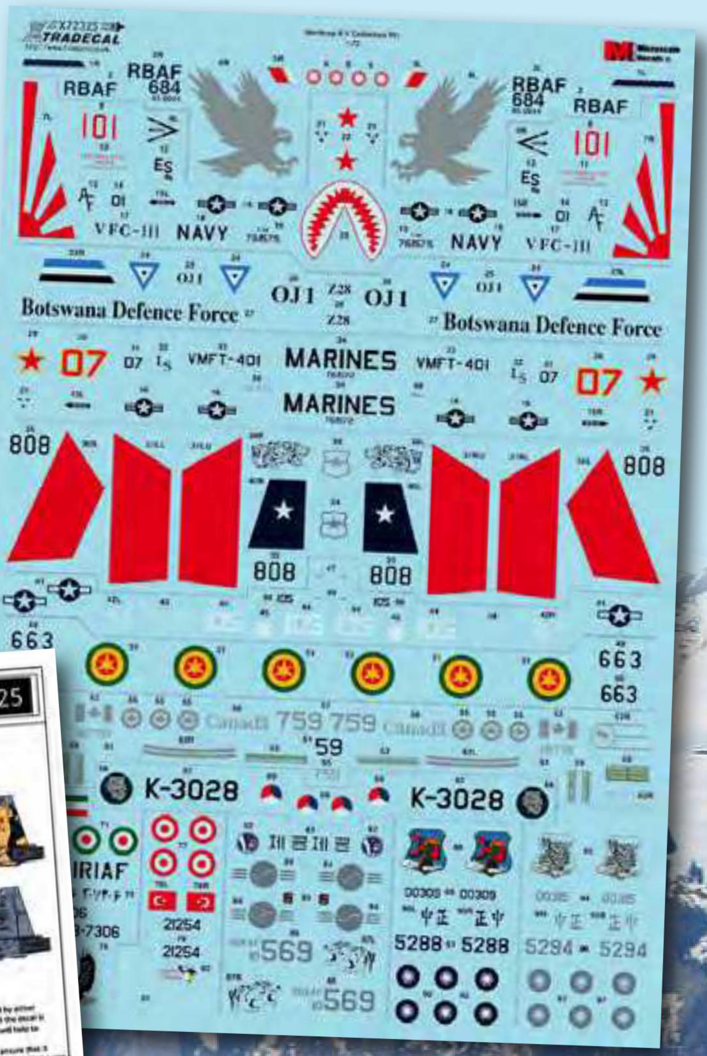


XTRADECAL

NORTHROP F-5E TIGER II WORLDWIDE COLLECTION PT.1 (SHEET NO. X72325)

A great set of 14 F-5s with schemes from all over the world. The sheet is tightly packed with decals. Each set of markings is separated by a dotted line and all come with their appropriate national markings.

- F-5E Tiger II, 85-0044 with the 6th Fighter Squadron, Royal Bahraini Air Force at Isa Air Base, Bahrain, 2016. The scheme is overall Light Compass Gray with a Dark Compass Gray tail fin and Gunship Gray nose.
- F-5N Tiger II, 761575 with VFC-111 (Sundowners), US Navy, at Nellis Air Base, Nevada, 2017. This F-5 is in a lovely Aggressor scheme of Light Compass Gray overall with a pattern of Navy Blue and Light Blue. The ‘Sundowners’ sunburst appears on the rudder and shark’s mouth on the nose in full colour.
- F-5E Tiger II, 761572 with VMFT-401 (Snipers), US Marine Corps at MCAS Yuma, USA, 2019. Another Aggressor’s scheme in overall Yellow with a splinter pattern of Earth Brown and Forest Green on the upper surfaces and Light Compass Gray undersides.
- CF-5A Tiger II, OJ1/Z28 with No Z28 Squadron, Botswana Defence Force at Gaborone Air Base, Botswana, October 2002. This CF-5A retains its original Canadian Ghost Aggressor wraparound scheme of three Gray shades.
- F-5E Tiger II, 808 with 5a Brigada Aerea, Chilian Air Force at Antofagasta BA Cerro Moreno, Chile, March 1989. A scheme of Light Compass Gray was applied overall with areas on the upper surfaces in Dark Compass Gray.
- F-5N Tiger II, 761547/’105’ with VFC-111 (Sundowners) US Navy at Nellis Air Base, Nevada, July 2013. This Sundowners F-5E was wearing a commemorative WWII US Navy scheme seen on Corsairs, etc. with Sea Blue and Navy Blue upper surfaces and White undersides.
- CF-5A Tiger II, 116759 with No. 419 Squadron, Royal Canadian Air Force at Trenton Air Base, Canada, June 1992. This CF-5A is finished in the Canadian Ghost Aggressor scheme with a wrap around camouflage pattern made up of three different Gray shades and low-viz markings.
- F-5A Tiger II, 663 Ethiopian Imperial Air Force at Addis Ababa, Ethiopia, 1974. This aircraft is in overall natural metal with a Black anti-glare panel on the upper nose and Light Blue patches painted under its serial numbers.
- NF-5A Tiger II, K-3028 with No. 315 Squadron, Royal Netherlands Air Force at Twenthe Air Base, in the Netherlands, August 1985. This Dutch F-5 is a similar scheme to the early F-16s with Dark Compass Gray and Gunship Gray upper surfaces and Haze Gray undersides.
- F-5E Tiger II, 3-7306 with the Islamic Republic of Iran Air Force at Dezful/Vahdati Air Base, Iran in 2010. This Iranian F-5 is in a camouflage scheme similar to the USAF Vietnam pattern with Brown, Sand and Forest Green upper surfaces and Light Blue undersides.
- KF-5E Jegongho, 10-569 with the 101st Fighter Squadron, Republic of Korea Air Force at Suwon Air Base, South Korea in 2009. Another low-viz scheme based on Light Compass Gray and a ‘cloud’ type pattern of Dark Compass Grey and a pale Blue-Grey nose.
- F-5A/2000 Tiger II, 21254 with 133. Filo, Turkish Air Force at Konya Air Base, Turkey in 2003. Again, a F-16 type scheme with overall Light Compass Gray and large areas of the top surfaces in Gunship Gray.
- F-5E Tiger II, 00309/5288 with 7th Group, Republic of China Air Force at Taitung, Taiwan in 1996. This Tiger II is finished in the cloud pattern of mainly Light Compass Gray with contrasting Dark Compass Gray similar to the F-15 Eagle’s scheme.
- F-5E Tiger II, 00315/5294 with 7th Group, Republic of China Air Force at Taitung, Taiwan in 2016. This Tiger II is in the same scheme as the above but with low-viz markings.



XTRADECAL
X72325
Northrop F-5 Tiger II
Worldwide Collection Pt1
HANNANTS
www.hannants.co.uk

J-3079
079
Last pilot school class on F-5 Tiger

A Swiss Air Force F-5E with the snow-capped mountains in the background.

TRANSFER LIST

Written by Alan Firbank.

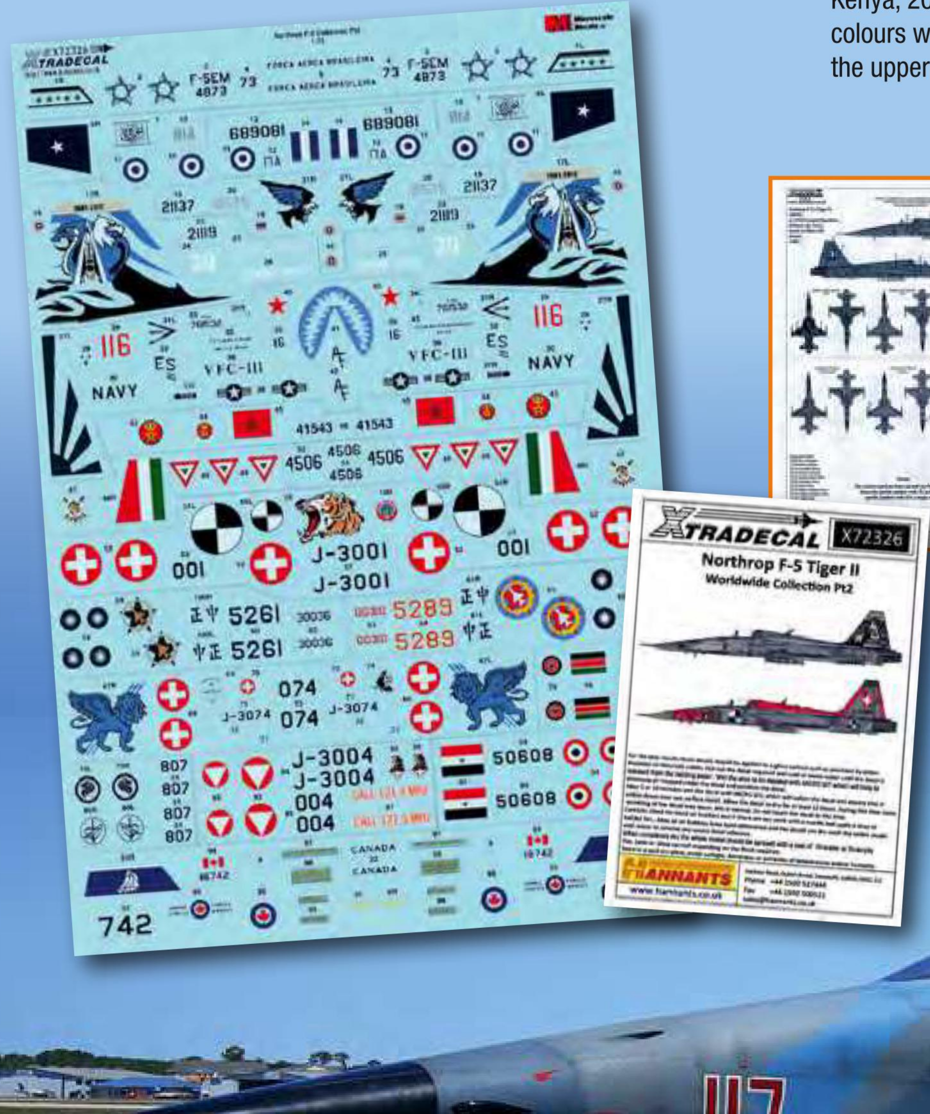
XTRADECAL

Three Turkish Air Force NF-5As in the same scheme as shown on the new Xtradecal sheet X72325.

NORTHROP F-5E TIGER II WORLDWIDE COLLECTION PT.2 (SHEET NO. X72326)

A staggering 17 sets of F-5 markings on this set with every inch of the decal sheet fully occupied. As above, each scheme is neatly separated, and all come with their national markings.

- F-5EM Tiger III, 4873 with the Brazilian Air Force at Canoas Air Base, Brazil, 2006. The camouflage scheme is overall Dark Gull Gray with a disruptive pattern of Gunship Green applied to the upper surfaces.
- F-5E Tiger III, 814 with the Chilian Air Force at Punta Arenas, Chile in 2011. An easy paint job of overall Dark Compass Gray with a Black nose.
- F-5E Tiger II, 21119 with the 211th Interception Squadron of the Royal Thailand Air Force at Korat AFB in 2014. Nice 'Shark Nose' Anniversary tail markings on this Tiger. The basic scheme is a pattern or Light and Dark Ghost Gray with maybe a nose grafted on from another aircraft that still retained its original Light Gray and Blue-Gray paintwork.
- F-5T Tigris, 21137/41575 with the 211th Interception Squadron of the Royal Thailand Air Force at Ubon Ratchathani AFB in 2012. The scheme is overall Gull Gray with large areas of Blue-Gray.
- F-5N Tiger II, 761532 with VCF-111 Sundowners, USN at Nellis AFB, Nevada in 2017. Another really good-looking USN Aggressor Sundowners scheme but with a toned-down sunburst and shark's mouth. The colours are overall Light Compass Gray with a pattern of Light Blue and Navy Blue.
- F-5E Tiger II, 41543 with the Moroccan Air Forces based at Rabat in 2009. Another Tiger II in a camouflage scheme similar to the old USAF Vietnam pattern of Sand, Brown and Forest Green with Light Gray undersides.
- F-5E Tiger II, 4506 with the Mexican Air Force at Lucia Air Base in 1992. Another Vietnam-style wrap around scheme was applied to this Mexican Tiger of Green, Forest Green and Tan.
- F-5E Tiger II, J-3001 with the Swiss Air Force at Emmen Air Base in 1997. Probably the most colourful scheme from this set is this Swiss F-5E. The basic pattern of Light and Dark Compass Gray comes with a large tiger's head on the nose and large areas of fluorescent Red-Orange on the airframe.
- F-5E Tiger II, 30036/5261 with the Republic of China Air Force at the Tainan Air Base, Taiwan, 2013. Another Vietnam-type camouflage scheme of two Greens and Tan on the upper surfaces with Light Gray undersides.
- F-5E Tiger II, 00310/5289 with the Republic of China Air Force at the Tainan Air Base, Taiwan, 2011. This Tiger II carried the same scheme as the Republic of China Tiger above but with high-viz national markings.
- F-5E Tiger II, 907 with the Kenya Air Force at Moi Air Base, Kenya, 2002. This Kenyan Tiger appears to be painted in RAF colours with a pattern of Dark Green and Dark Sea Grey on the upper surfaces with Light Aircraft Grey undersides.
- F-5E Tiger II, J-3074/'PA CAPONA 31' with the Swiss Air Force Flight Training Unit 31 at Meiringen Air Base, Switzerland, June 2016. Another attractive Swiss Tiger with a flying lion emblem on the tail fin. The colours are a cloud pattern of Light and Dark Compass Gray with a Dark Blue-Gray tail fin to enable the lion artwork to stand out.
- F-5S Tiger II, 807 with No. 144 Squadron, Royal Singapore Air Force at Paya Lebar Air Base, 2008. This F-5E is also in a scheme similar to the F-16 Hill scheme with Dark Compass Gray and Gunship Gray on the upper surfaces and Haze Blue undersides.
- F-5E Tiger II J-3004 with 2. Staffel, Austrian Air Force at Graz-Thalerhof Air Base, Austria, 2006. Another F-15-style cloud camouflage scheme consisting of Dark and Light Compass Gray.
- CF-5A Tiger II, 116742 with No 434 Squadron, Canadian Air Force at Bagotville Air Base, Canada, 1983. The scheme on this CF-5A is a wrap- around disruptive pattern of Olive Drab and Dark Blue Gray with full colour Canadian insignia.
- F-5E Tiger II, 50608 with the North Yemen Air Force at Sana Air Base, North Yemen, 1980. This Tiger II carried a desert camouflage scheme of Tan and Beige on the upper surfaces with Light Gray undersides.
- F-5A Tiger II, 689081 with No. 343rd (Asteri) Squadron, Hellenic Air Force at Mikra Air Base, Greece in the 1980s. This is one of the simplest colour schemes here with Navy Blue upper surfaces and Silver undersides.



117
VFC-111
NAVY

A US Navy F-5N Tiger II as seen on Xtradecal sheet X72325.

Photos supplied by Rob Palmer.

WESTLAND WHIRLWIND

WE EXPLORE THE GENESIS, DEVELOPMENT AND SERVICE OF THE WESTLAND WHIRLWIND TWIN-ENGINE FIGHTER

The Westland Whirlwind was a British twin-engine heavy fighter developed by Westland Aircraft. A contemporary of the Supermarine Spitfire and Hawker Hurricane, it was the first single-seat, twin-engine, cannon-armed fighter of the Royal Air Force.

When it first flew in 1938, the Whirlwind was one of the fastest combat aircraft in the world and with four Hispano-Suiza HS.404 20 mm autocannon in its nose, the most heavily armed. Protracted development problems with its Rolls-Royce Peregrine engines delayed the project and few Whirlwinds were built. During the Second World War, only three RAF squadrons were equipped with the aircraft but despite its success as a fighter and ground attack aircraft, it was withdrawn from service in 1943.

By the mid-1930s, aircraft designers around the world perceived that increased attack speeds were imposing shorter firing times on fighter pilots. This implied less ammunition hitting the target and ensuring destruction. Instead of two rifle-calibre machine guns, six or eight were required; studies had shown that eight machine guns could deliver 256 rounds per second. The eight machine guns installed in the Hurricane fired rifle-calibre rounds, which did not deliver enough damage to quickly knock out an opponent, and were dispersed

"COMRADES IN ARMS"
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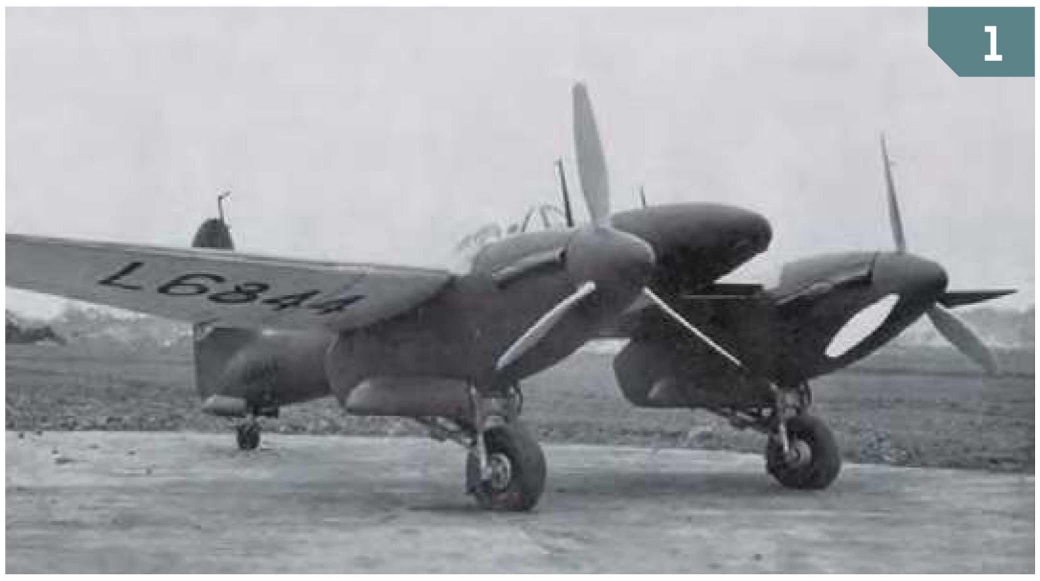

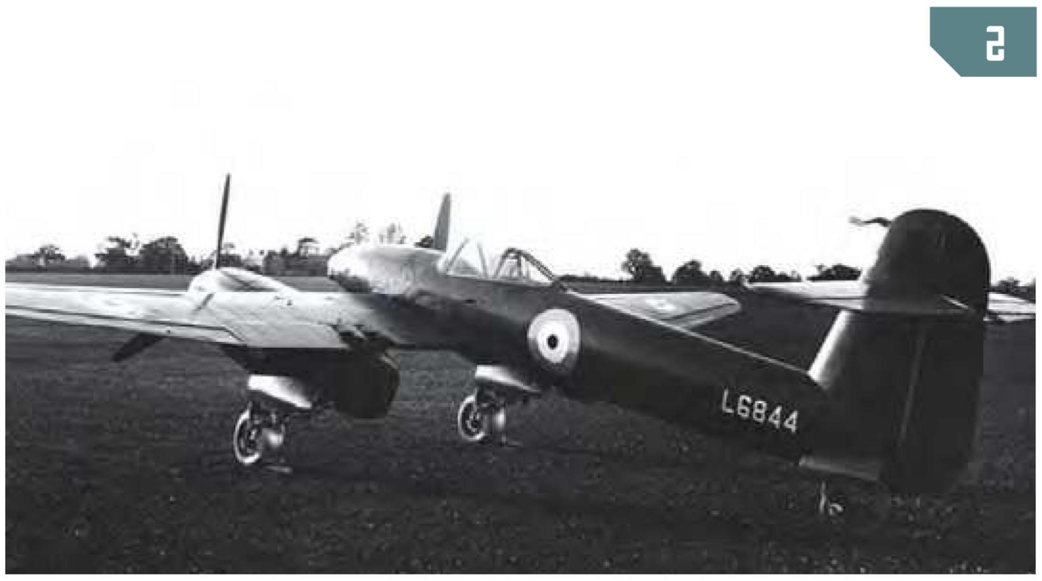

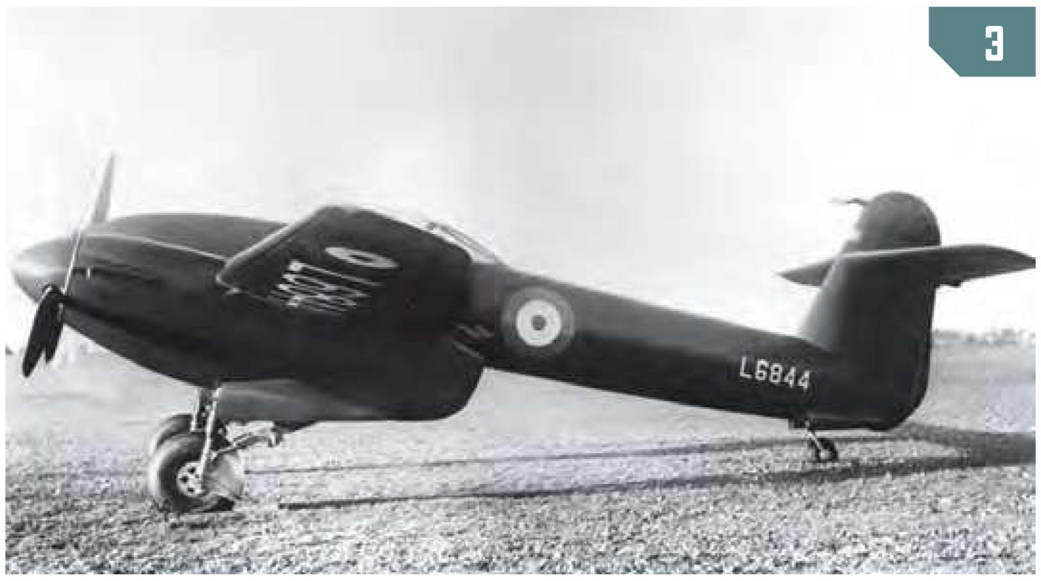

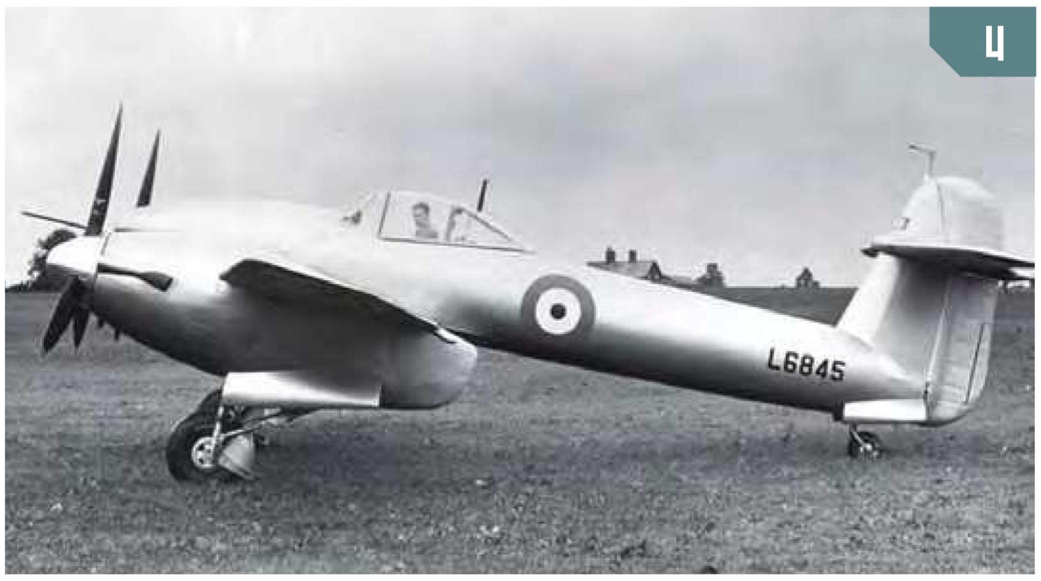

1: L6844, the first Whirlwind prototype. 2: The first prototype was finished in overall blue. 3: Prototype in profile. 4: Whirlwind second prototype L6845.

at ranges other than that at which they were harmonised. Cannon, such as the French 20 mm Hispano-Suiza HS.404, which could fire explosive ammunition, offered more firepower and attention turned to aircraft designs which could carry four cannon. While the most agile fighter aircraft were generally small and light, their meagre fuel capacity limited their range and tended to restrict them to defensive and interception roles. The larger airframes and bigger fuel loads of twin-engine designs were favoured for long-range, offensive roles.

The first British specification for a high-performance machine-gun monoplane was F.5/34 but the aircraft produced were overtaken by the development of the new Hawker and Supermarine fighters. The RAF Air Staff thought that an experimental aircraft armed with the 20 mm cannon was needed urgently and Air Ministry specification F.37/35 was issued in 1935. The specification called for a single-seat day and night fighter armed with four cannon. The top speed had to be at least 40 mph (64 km/h) greater than that of contemporary bombers – at least 330 mph (530 km/h) at 15,000 ft (4,600 m).

Eight aircraft designs from five companies were submitted in response to the specification. Boulton Paul offered the P.88A and P.88B (two related single engine designs differing in engine: Hercules radial or Vulture in-line), Bristol the single-engined Type 153 with cannon in wings and the twin-engine Type 153A with cannon in nose. Hawker offered a variant of the Hurricane, the Supermarine Type 312 was a variant of Spitfire and the Supermarine Type 313 a twin-engine (RR Goshawk or Hispano 12Y) design with four guns in the nose and potentially a further two firing through the propeller hubs if the 12T was used, the Westland P.9 had two Rolls-Royce Kestrel K.26 engines and a twin tail.

When the designs were considered in May 1936, there was concern that on the one hand a two engine design would be less manoeuvrable than a single-engine design and on the other that uneven recoil from cannon set in the wings would give less accurate fire. The conference favoured two engines with the cannon set in the nose and recommended the Supermarine 313. Although Supermarine's efforts were favoured due to their success with fast aircraft and the promise of the Spitfire which was undergoing trials, neither they nor Hawker were in a position to deliver a modified version of their single-engine designs quickly enough - over two years for Supermarine. Westland, which had less work and was further advanced in their project, was chosen along with the P.88 and the Type 313 for construction. A contract for two P.9s was placed in February 1937 which were expected to be flying in mid-1938. The P.88s were ordered in December along with a Supermarine design to F37/35 but both were cancelled in January.

The Westland design team, under the new leadership of W. E. W. "Teddy" Petter designed an aircraft that employed state-of-the-art technology. The monocoque fuselage was tubular, with a T-tail at the end, although as originally conceived, the design featured a twin tail, which was discarded when large Fowler flaps were added that caused large areas of turbulence over the tail unit. By the employment of the T-tail, the elevator was moved up out of the way of the disturbed airflow caused when the flaps were down. Handley Page slats were fitted to the outer wings and to the leading edge of the radiator openings; these were interconnected by duraluminium torque tubes. In June 1941, the slats were wired shut on the recommendation of the Chief Investigator of the Accident Investigation Branch, after two Whirlwinds crashed when the outer slats failed during vigorous manœuvres; tests by the Aeroplane and Armament Experimental Establishment (A&AEE) confirmed that the Whirlwind's take-off and landing was largely unaffected with the slats locked shut, while the flight characteristics improved under the conditions in which the slats normally deployed.

The engines were developments of the Rolls-Royce Kestrel K.26, later renamed Peregrine. The first prototype, L6844, used long exhaust ducts that were channelled through the wings and fuel tanks, exiting at the wing's trailing edge. This configuration was quickly changed to more conventional, external exhausts after Westland's Chief test pilot Harald Penrose nearly lost control when an exhaust duct broke and heat-fractured an aileron control rod. The engines were cooled by ducted radiators, which were set into the leading edges of the wing centre-sections to reduce drag. The airframe was built mainly of stressed-skin duralumin, with the exception of the rear-fuselage, which used a magnesium alloy stressed skin. With the pilot sitting high under one of the world's first full bubble

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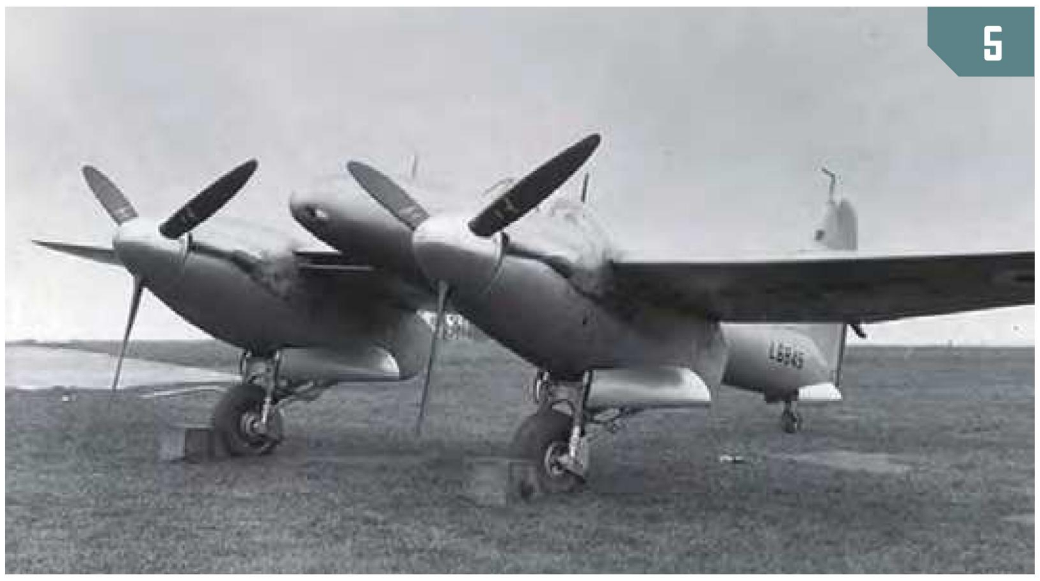
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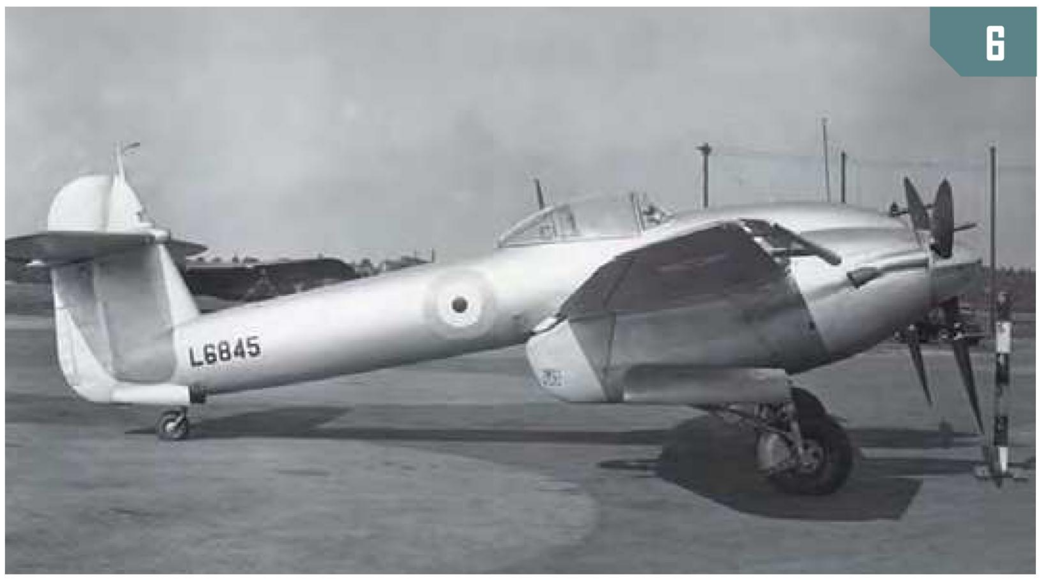
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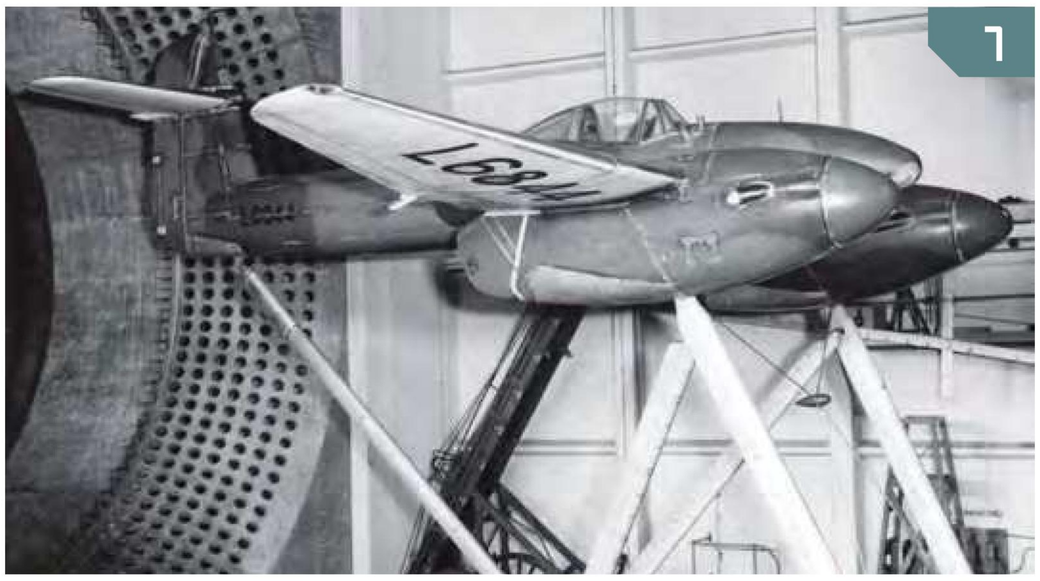
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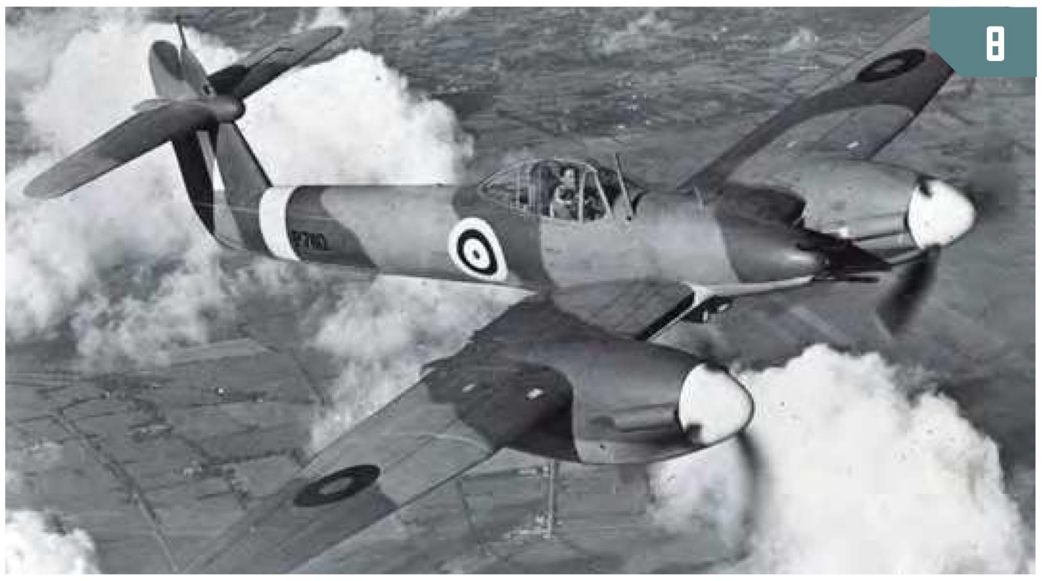
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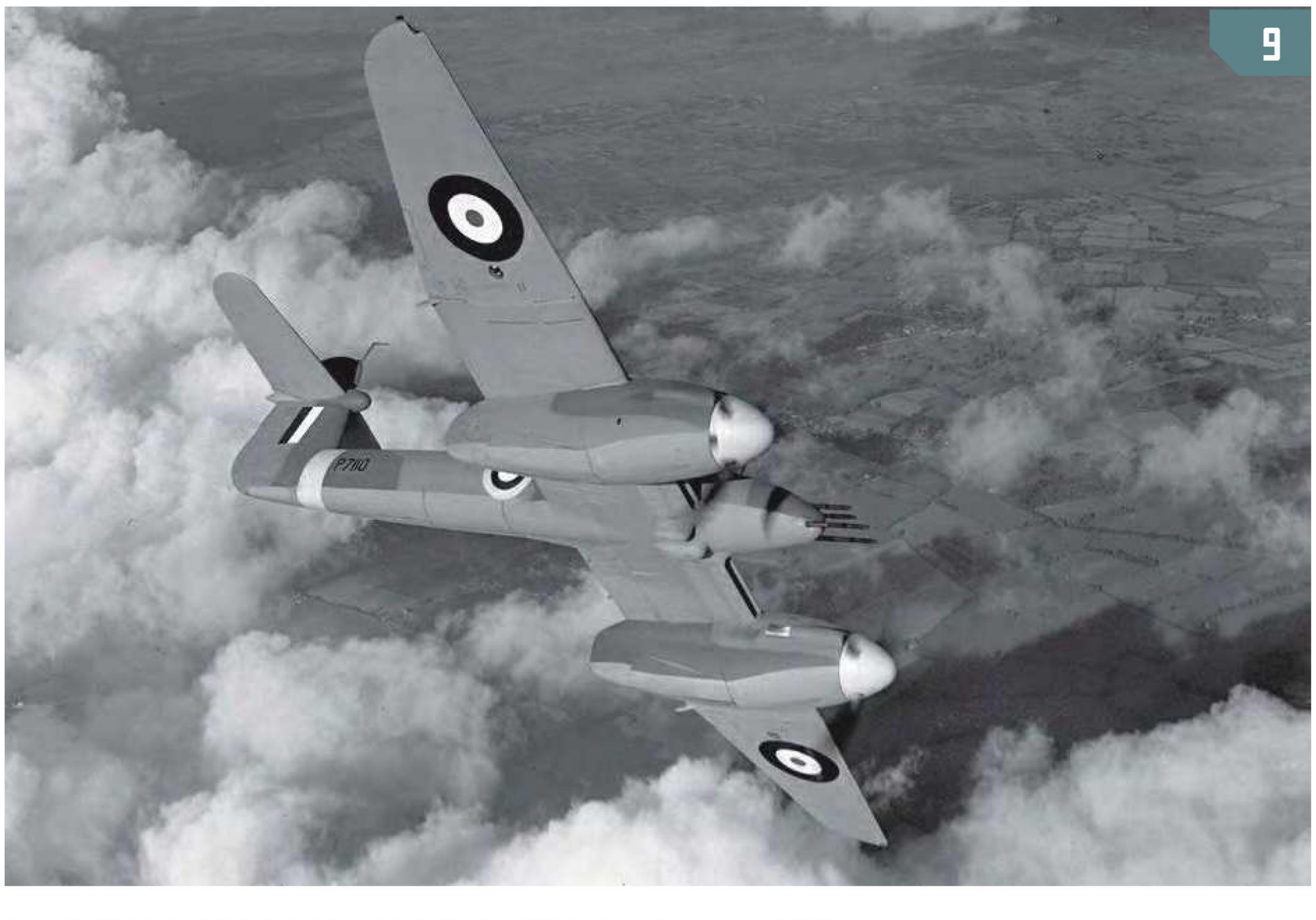
5: This aircraft was presented in a painted silver with polished metal spinners. 6: Starboard view of the Whirlwind prototype. 7: Whirlwind in the wind tunnel. 8: Serial No. P7110, one of the last production Whirlwinds. 9: A lovely view of the lower surfaces of P7110.

canopies and the low and forward location of the wing, all round visibility was good (except for directly over the nose). Four 20 mm cannon were mounted in the nose; the 600 lb/minute fire rate made it the most heavily armed fighter aircraft of its era. The clustering of the weapons also meant that there were no convergence problems as with wing-mounted guns. Hopes were so high for the design that it remained top secret for much of its development, although it had already been mentioned in the French press.

L6844 first flew on 11 October 1938, construction having been delayed chiefly due to the new features and also because of the late delivery of the engines and undercarriage. L6844 was passed to RAE Farnborough at the end of the year, while further service trials were later carried out at Martlesham Heath. The Whirlwind exhibited excellent handling characteristics and proved to be very easy to fly at all speeds. The only exception was the inadequate directional control during take-off which necessitated an increased rudder area above the tailplane.

The Whirlwind was quite small, only slightly larger than the Hurricane but with a smaller frontal area. The landing gear was fully retractable and the entire aircraft had a very clean finish with few openings or protuberances. Radiators were in the leading edge on the inner wings rather than below the engines. This careful attention to streamlining and two 885 hp Peregrine engines powered it to over 360 mph (580 km/h), the same speed as the latest single-engine fighters. The aircraft had short range, under 300 mi (480 km) combat radius, which made it marginal as an escort. The first deliveries of Peregrine engines did not reach Westland until January 1940.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By late 1940, the Supermarine Spitfire was scheduled to mount 20 mm cannon so the "cannon-armed" requirement was being met and by this time, the role of escort fighters was becoming less important as RAF Bomber Command turned to night flying. The main qualities the RAF were looking for in a twin-engine fighter were range and carrying capacity (to allow the large radar apparatus of the time to be carried), in which requirements the Bristol Beaufighter could perform just as well as or even better than the Whirlwind.

Production orders were contingent on the success of the test programme; although ACAS was impressed by the design the highly experimental design needed careful examination. Delays caused by over 250 modifications to the two prototypes led to an initial production order for 200 aircraft being held up until January 1939, followed by a second order for a similar number, deliveries to fighter squadrons being scheduled to begin in September 1940. Earlier, due to the lower expected production at Westland, there had been suggestions that production should be by other firms (Fairey or Hawker) and an early

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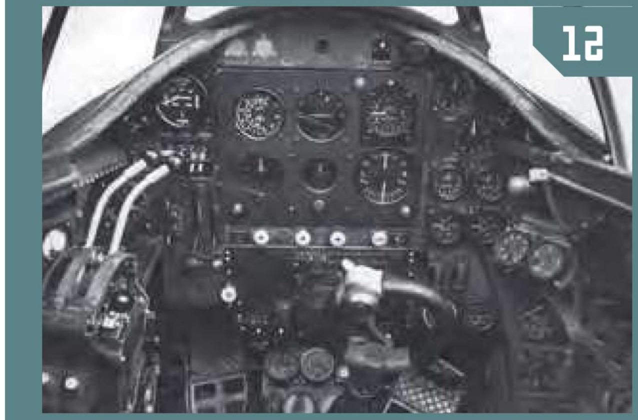

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10: A nice low angle of P7110 with undercarriage lowered. 11: Whirlwinds under assembly. 12: The Whirlwind instrument panel. 13: ???????????????? ??????????? 14: Personnel from 137 Squadron RAF with their Whirlwinds.

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1939 plan to build 800 of them at the Castle Bromwich factory was dropped in favour of Spitfire production; instead a further 200 would be built by Westland.

Despite the Whirlwind's promise, production ended in January 1942, after the completion of just 112 production aircraft (plus the two prototypes). Rolls-Royce needed to concentrate on the development and production of the Merlin engine, and the troubled Vulture, rather than the Peregrine. Westland was aware that its design – which had been built around the Peregrine – was incapable of using anything larger without an extensive redesign. After the cancellation of the Whirlwind, Petter campaigned for the development of a Whirlwind Mk II, which was to have been powered by an improved 1,010 hp Peregrine, with a better, higher-altitude supercharger, also using 100 octane fuel, with an increased boost rating. This proposal was aborted when Rolls-Royce cancelled work on the Peregrine. Building a Whirlwind consumed three times as much alloy as a Spitfire.

Operational History

Many pilots who flew the Whirlwind praised its performance. Sergeant G. L. Buckwell of 263 Squadron, who was shot down in a Whirlwind over Cherbourg, later commented that the Whirlwind was "great to fly – we were a privileged few... In retrospect the lesson of the Whirlwind is clear... A radical aircraft requires either prolonged development or widespread service to exploit its concept and eliminate its weaknesses. Too often in World War II, such aircraft suffered accelerated development or limited service, with the result that teething difficulties came to be regarded as permanent limitations". Another 263 Squadron pilot said "It was regarded with absolute confidence and affection". By comparison the test pilot Eric Brown described the aircraft as "under-powered" and "a great disappointment".

An aspect of the type often criticised was the high landing speed imposed by the wing design. Because of the low production level, based on the number of Peregrines available, no redesign of the wing was contemplated, although Westland did test the effectiveness of leading-edge slats to reduce speeds. When the slats were activated with such force that they were ripped off the wings, the slats were wired shut.

As the performance of the Peregrine engines fell off at altitude, the Whirlwind was most often used in ground-attack missions over France, attacking German airfields, marshalling yards, and railway traffic. The Whirlwind was used to particularly good effect as a gun platform for destroying locomotives. Some pilots were credited with several trains damaged or destroyed in a mission. The aircraft was also successful in hunting and destroying German E-boats which operated in the English Channel. At lower altitudes, it could hold its own against the Bf 109. Though the Peregrine was a much-maligned powerplant, it was more reliable than the troublesome Napier Sabre engine used in the Hawker Typhoon, the Whirlwind's successor. The twin engines meant that seriously damaged aircraft were able to return with one engine knocked out. The placement of the wings and engines ahead of the cockpit allowed the aircraft to absorb a great deal of damage, while the cockpit area remained largely intact. The rugged frame of the Whirlwind gave pilots greater protection than contemporary aircraft during crash landings and ground accidents. According to P. J. R. Moyes:

The basic feature of the Whirlwind was its concentration of firepower: its four closely-grouped heavy cannon in the nose had a rate of fire of 600 lb./minute – which, until the introduction of the Beaufighter, placed

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it ahead of any fighter in the world. Hand in hand with this dense firepower went a first-rate speed and climb performance, excellent manoeuvrability, and a fighting view hitherto unsurpassed. The Whirlwind was, in its day, faster than the Spitfire down low and, with lighter lateral control, was considered to be one of the nicest "twins" ever built… From the flying viewpoint, the Whirlwind was considered magnificent

The first Whirlwinds went to 25 Squadron based at North Weald. The squadron was fully equipped with radar-equipped Bristol Blenheim IF night fighters when Squadron Leader K. A. K. MacEwen flew prototype Whirlwind L6845 from Boscombe Down to North Weald on 30 May 1940. The following day it was flown and inspected by four of the squadron's pilots and the next day was inspected by the Secretary of State for Air, Sir Archibald Sinclair and Lord Trenchard. The first two production Whirlwinds were delivered in June to 25 Squadron for night-flying trials. It was then decided to re-equip 25 Squadron with the two-seat Bristol Beaufighter night fighter, as it was already an operational night fighter squadron.

The first Whirlwind squadron would be 263 Squadron, which was reforming at Grangemouth, after disastrous losses in the Norwegian Campaign. The first production Whirlwind was delivered to 263 Squadron by its commander, Squadron Leader H. Eeles on 6 July. Deliveries were slow, with only five on strength with 263 Squadron on 17 August 1940 and none serviceable. (The squadron supplemented its strength with Hawker Hurricanes to allow the squadron's pilots to fly in the meantime.) Despite the Battle of Britain and the consequent urgent need for fighters, 263 Squadron remained in Scotland, Air Chief Marshal Hugh Dowding, in charge of RAF Fighter Command, stated on 17 October that 263 could not be deployed to the south because "there was no room for 'passengers' in that part of the world".

The first Whirlwind was written off on 7 August when Pilot Officer McDermott had a tyre blow out while taking off in P6966. In spite of this he managed to get the aircraft airborne. Flying Control advised him of the dangerous condition of his undercarriage. PO McDermott bailed out of the aircraft between Grangemouth and Stirling. The aircraft dived in and buried itself eight feet into the ground. On recent inspection of the salvaged wreck of P6966, it was noticed that the defective tyre fitted was not of the correct size for a Whirlwind. Instead, it was the correct size for a Hurricane which 263 Squadron was also flying.

No. 263 Squadron moved south to RAF Exeter and was declared operational with the Whirlwind on 7 December 1940. Initial operations consisted of convoy patrols and anti E-boat missions. The Whirlwind's first confirmed kill occurred on 8 February 1941, when an Arado Ar 196 floatplane was shot down; the Whirlwind responsible also crashed into the sea and the pilot was killed. From then on the squadron was to have considerable success with the Whirlwind while flying against enemy Junkers Ju 88s, Dornier Do 217s, Messerschmitt Bf 109s and Focke-Wulf Fw 190s.

263 Squadron also occasionally carried out day bomber escort missions with the Whirlwinds. One example was when they formed part of the escort of 54 Blenheims on a low-level raid against power stations near Cologne on 12 August 1941; owing to the relatively short range of the escorts, including the Whirlwinds, the fighters turned back near

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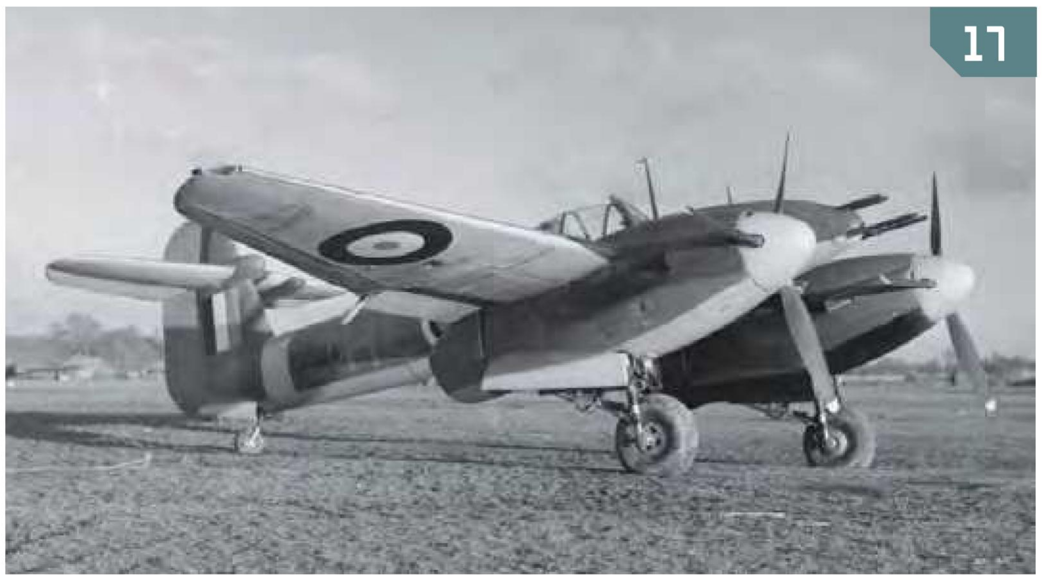

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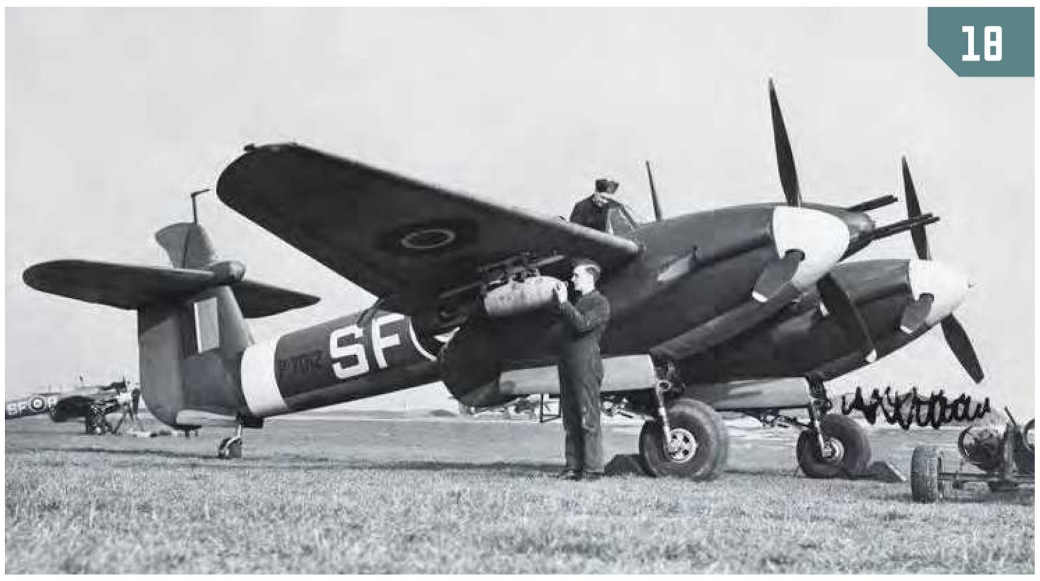

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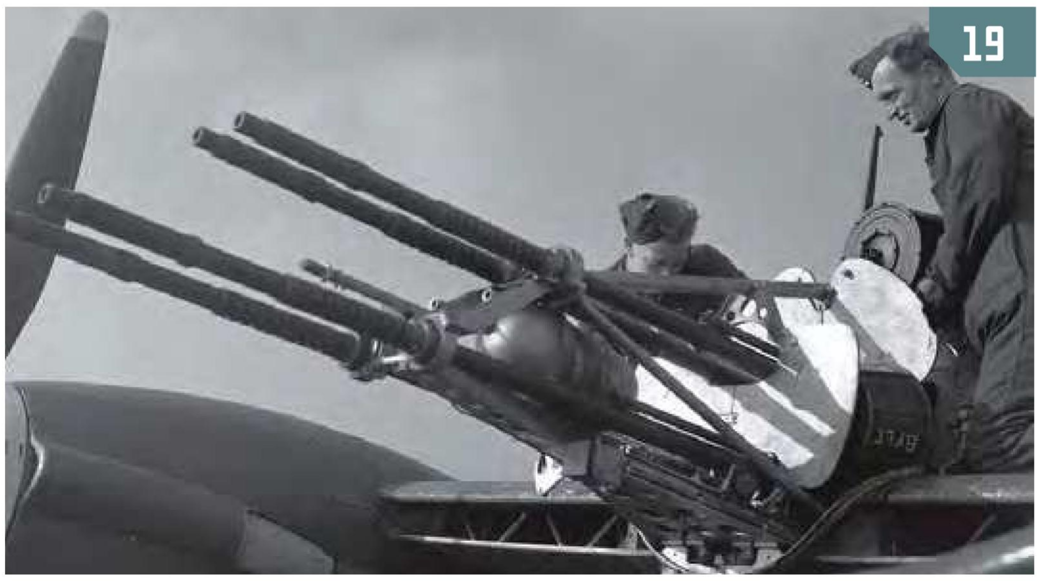

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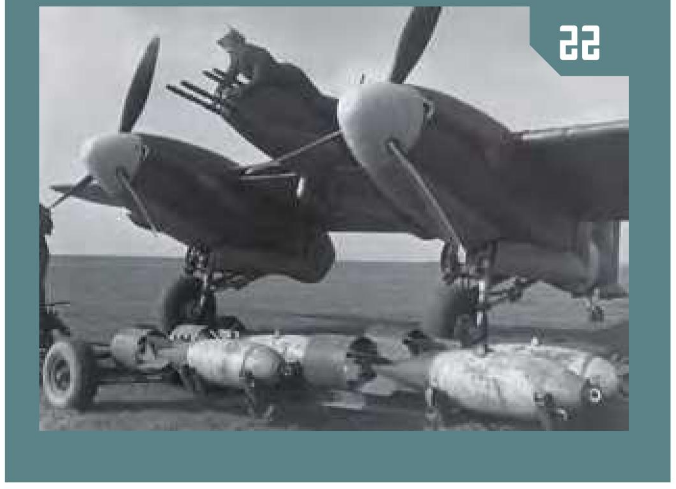

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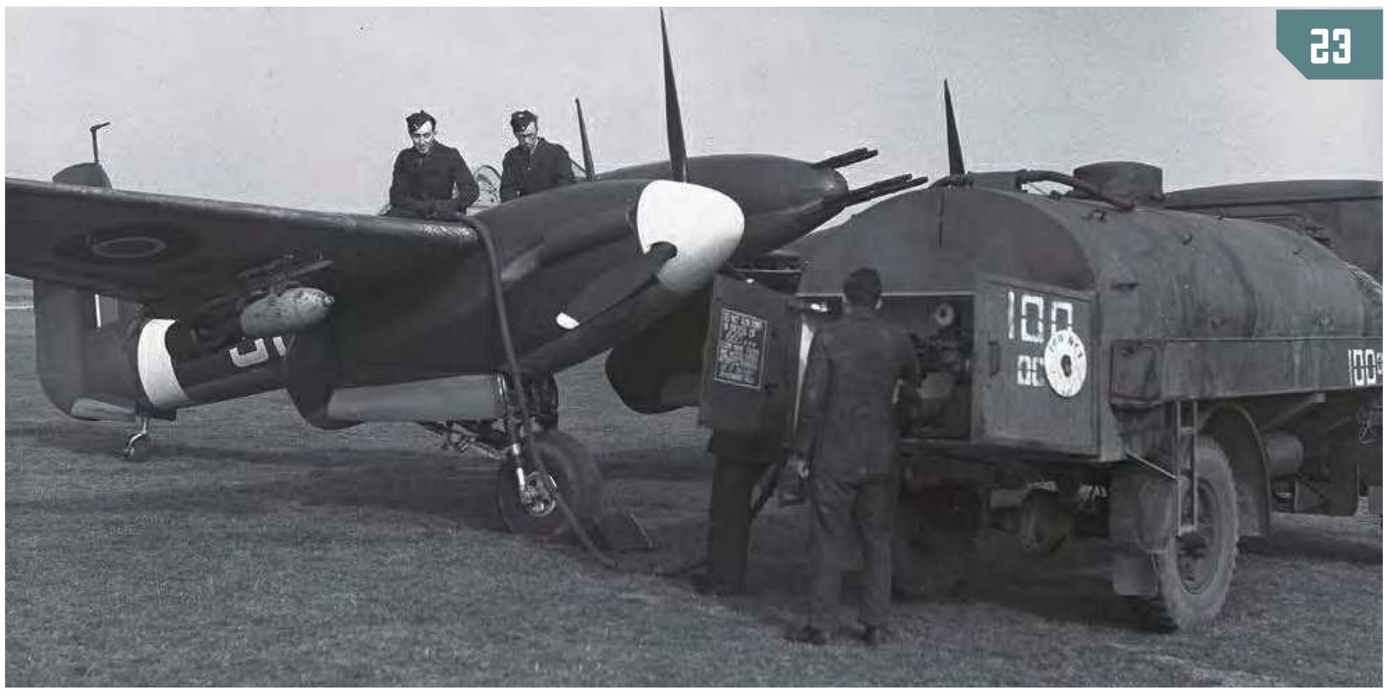

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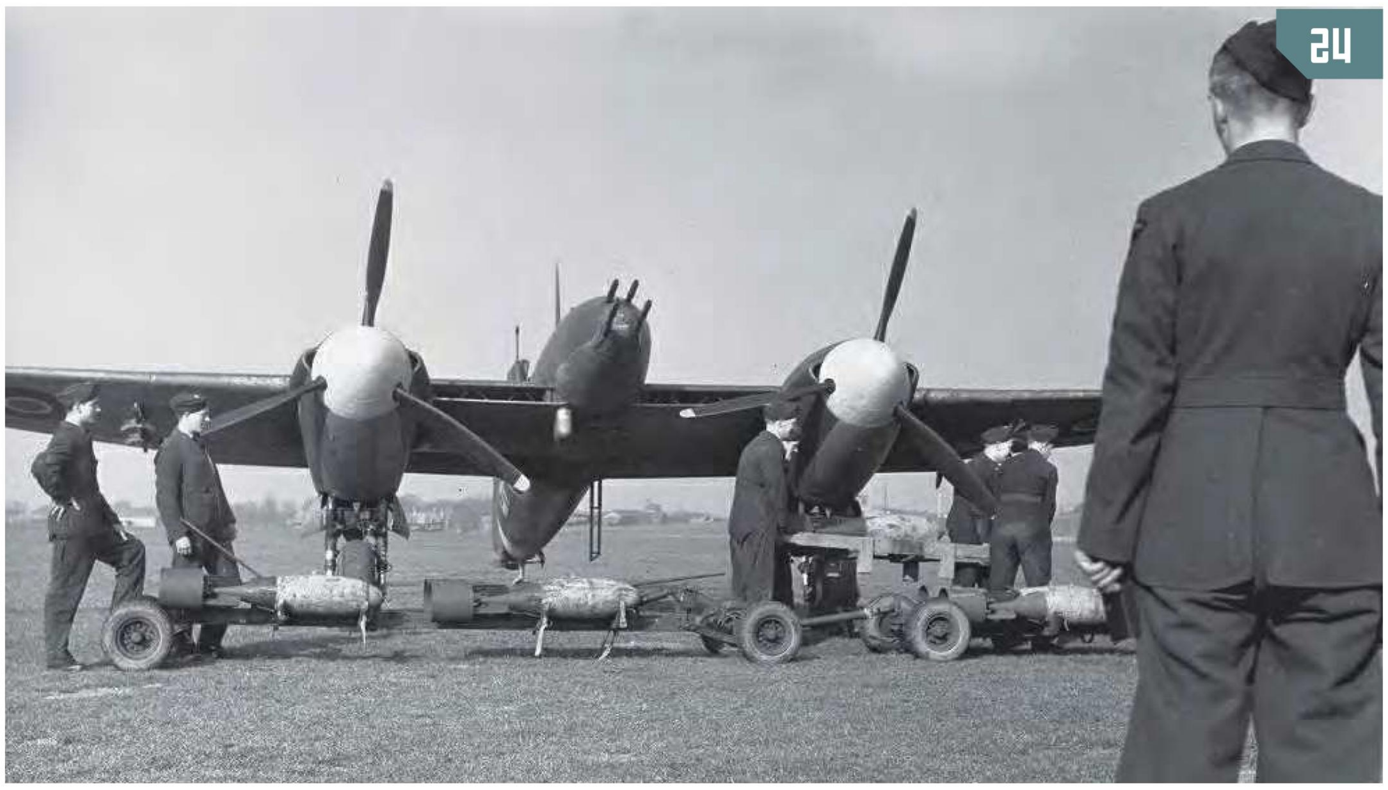


15: An airfield tractor with 250 lb bombs. 16: HE-A from 264 Squadron RAF. 17: Whirlwind Mk.I P6984 HE-H of No. 263 Squadron RAF. 18: A 137 Squadron Whirlibomber. 19: Fitting new ammunition drums for the Hispano cannon. 20: The nose panel is replaced. 21: Securing a 250 lb bomb. 22: Nice detail of the nacelles and spinners. 23: Refuelling. 24: A nice forward view.

Antwerp, with the bombers continuing on without escort. Ten Blenheims were lost.

The squadron mostly flew low-level attack sorties across the channel ("Rhubarbs" against ground targets and "Roadstead" attacks against shipping). The Whirlwind proved a match for German fighters at low level, as demonstrated on 6 August 1941, when four Whirlwinds on an anti-shipping strike were intercepted by a large formation of Messerschmitt Bf 109s and claimed three Bf 109s destroyed for no losses. A second Whirlwind squadron, 137, formed in September 1941, specialising in attacks against railway targets. In the summer of 1942, both squadrons were fitted with racks to carry two 250 or 500 lb (110 or 230 kg) bombs, and nicknamed Whirlibombers. These undertook low-level cross-channel "Rhubarb" sweeps, attacking locomotives, bridges, shipping and other targets.

The worst losses of 137 Squadron occurred on 12 February 1942 during the Channel Dash, when they were sent to escort five British destroyers, unaware of the escaping German warships Scharnhorst and Gneisenau. Four Whirlwinds took off at 13:10 hours and soon sighted warships through the clouds about 20 mi (32 km) from the Belgian coast. They descended to investigate and were immediately jumped by about 20 Bf 109s of Jagdgeschwader 2. The Whirlwinds shot at anything in their sights but were heavily outnumbered. While this was happening, at 13:40, two more Whirlwinds were sent up to relieve the first four and two more Whirlwinds took off at 14:25; four of the eight Whirlwinds failed to return.

From 24 October until 26 November 1943, Whirlwinds of 263 Squadron made several heavy attacks against the German blockade runner Münsterland, in dry dock at Cherbourg. As many as 12 Whirlwinds participated at a time in dive bombing attacks carried out from 12,000–5,000 ft (3,700–1,500 m) using 250 lb (110 kg) bombs. The attacks were met by very heavy anti-aircraft fire but virtually all bombs fell within 500 yd (460 m) of the target; only one Whirlwind was lost during the attacks.

The last Whirlwind mission to be flown by 137 Squadron was on 21 June 1943, when five Whirlwinds took off on a "Rhubarb" attack against the German airfield at Poix. P6993 was unable to locate the target and instead bombed a supply train north of Rue. While returning, the starboard throttle jammed in the fully open position and the engine eventually lost power. It made a forced landing in a field next to RAF Manston but the aircraft was a write-off, although, as in many other crash landings in the type, the pilot walked away unhurt.

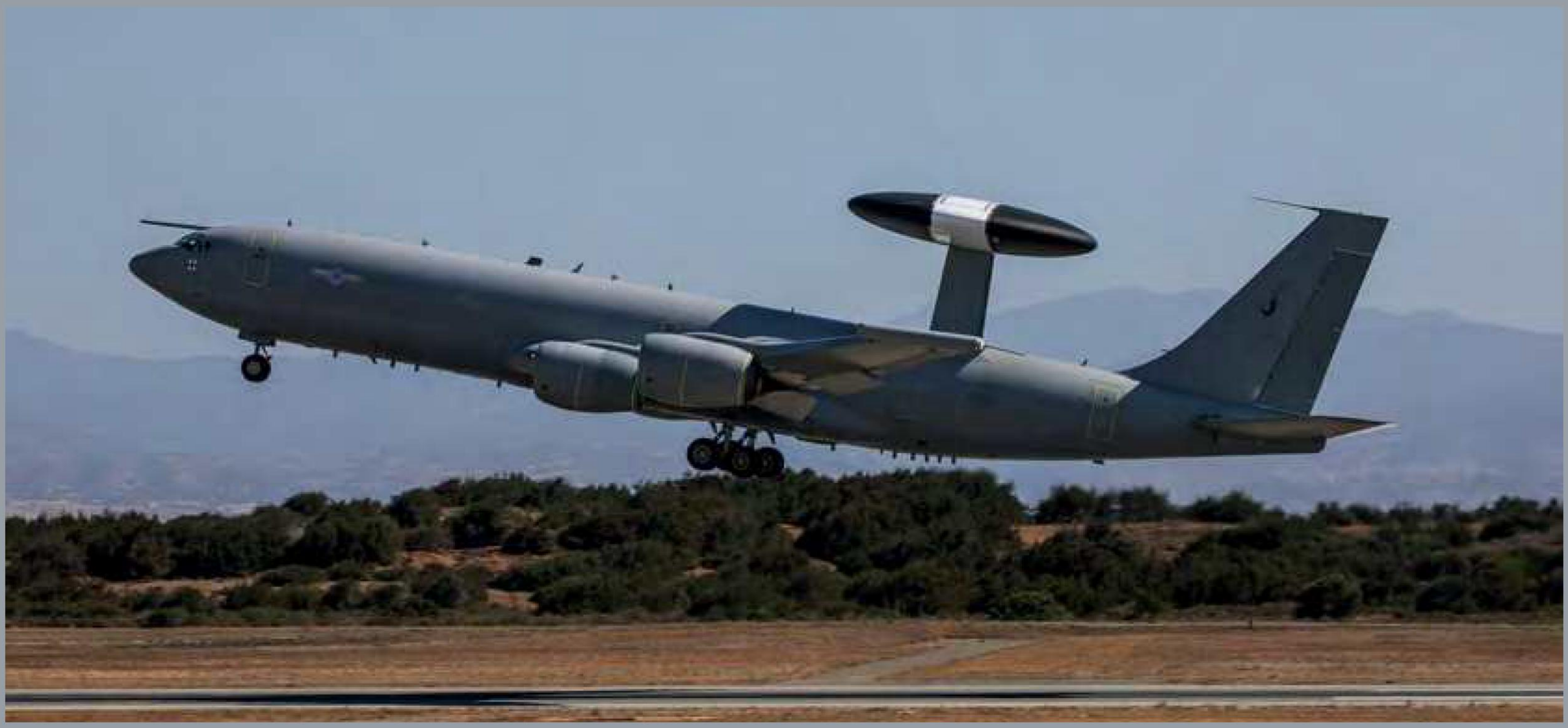
No. 263 Squadron, the first and last squadron to operate the Whirlwind, flew its last Whirlwind mission on 29 November 1943, turning in their aeroplanes and converting to the Hawker Typhoon in December that year. On 1 January 1944, the type was declared obsolete. The remaining serviceable aircraft were transferred to No. 18 Maintenance Unit, while those undergoing repairs or overhaul were allowed to be repaired only if they were in near-flyable condition. An official letter forbade aircraft needing repair to be worked on.

The aircraft was summed up by Francis Mason as follows:

> *"Bearing in mind the relatively small number of Whirlwinds that reached the RAF, the type remained in combat service, virtually unmodified, for a remarkably long time… The Whirlwind, once mastered, certainly shouldered extensive responsibilities and the two squadrons were called upon to attack enemy targets from one end of the Channel to the other."*

Text adapted from Wikipedia https://en.wikipedia.org/wiki/Westland_Whirlwind_(fighter) ■

AKROTIRI AWACS



An E-3D Sentry, or AWACS, at RAF Akrotiri flying in support of Defence Operations.

Commonly known as AWACS (Airborne Warning And Control System) after its US nomenclature, the E-3D Sentry AEW. Mk 1 (Sentry AEW1 E-3D) is an airborne early warning (AEW) and command and control aircraft.

The Sentry monitors airspace to provide threat detection of adversary aircraft and situational awareness on friendly assets.

Information gathered by the Northrop Grumman APY-2 radar is processed by the mission crew and disseminated via a variety of data links and communication systems.

Sentry also has the capability to detect ships, relaying information to maritime aircraft or allied vessels for further investigation.

Its electronic support measures equipment enables the E-3D to gather emissions from other radar systems and emitters, enhancing the crew's understanding of the environment in which it is operating. ■

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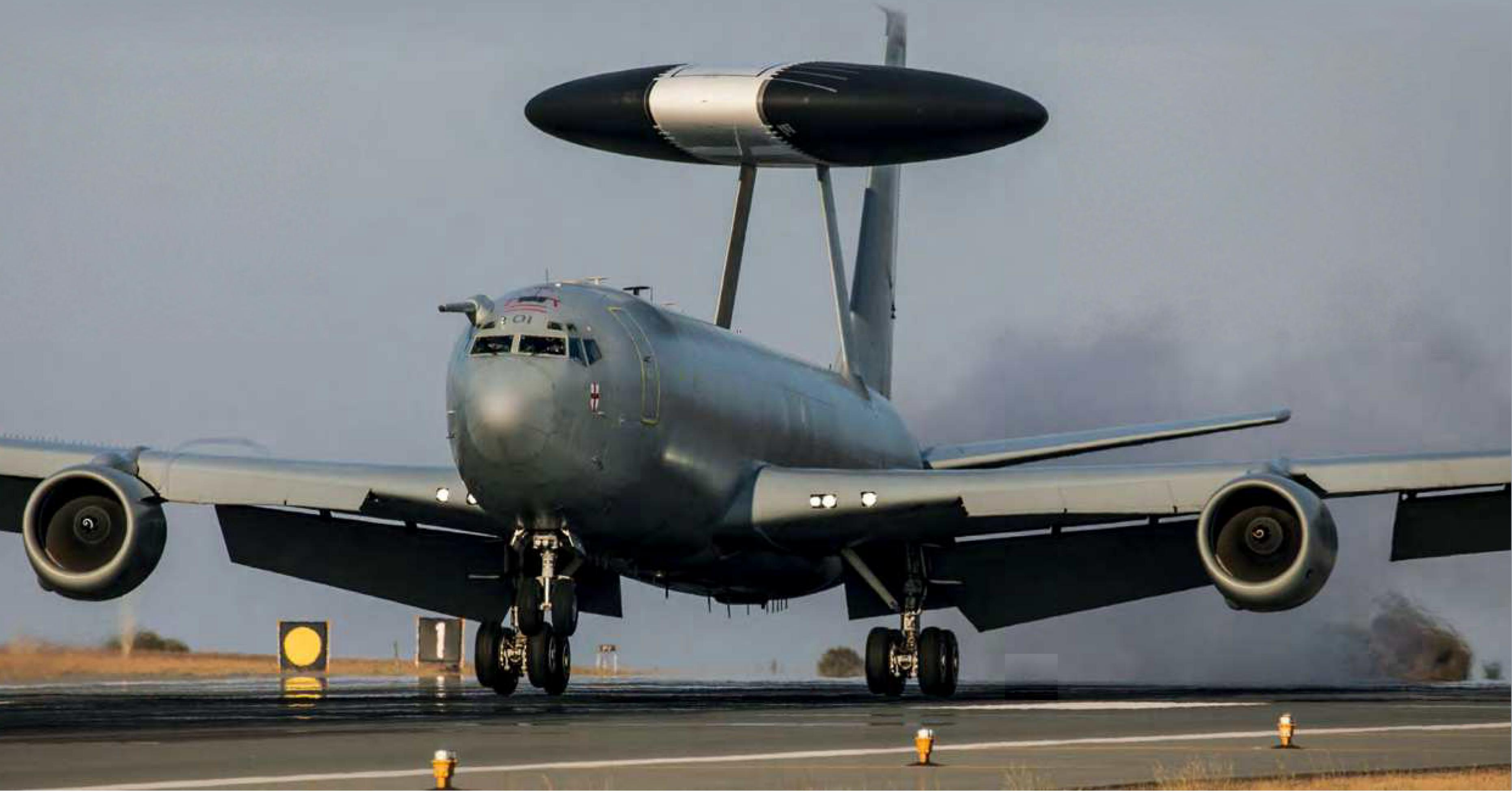

SAMPLES FOR REVIEW

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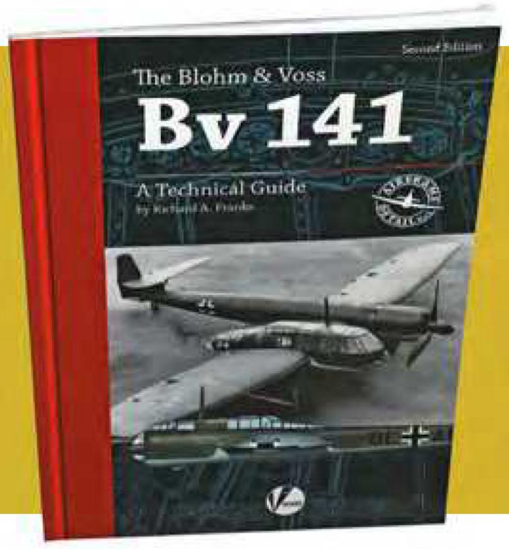


VALIANT WINGS PUBLISHING

The Blohm & Voss Bv 141
A Technical Guide (Second Edition)

valiant-wings.co.uk

- By Richard A. Franks
- Guide Price £14.95
- ISBN 978-1-912932-19-1
- 64pp softback, 297 x 210mm

This another of Valiant Wings' second editions that have been published during the last few months. The original Bv 141 book was published back in 2014. We welcome these amended reprints as several of the titles have been difficult to find for a while. We don't have a copy of the first edition to hand for comparison but one thing for sure is that the kit review at the back of the book would not have appeared before.

The Bv 141 is towards the top of any list of odd-looking aircraft with its offset fuselage with the single engine on the front and a crew cabin on the wing, a few feet away to the right of the fuselage. Having the spinning propeller so close must have been worrying for the pilot. However, the design did allow for a much larger cockpit, occupied by the crew of three, compared to most single-engine aircraft.

This book's first chapter covers the history and development of the Bv 141. From the beginning the general layout remained the same but the crew pod would be refined as the design was developed. This chapter includes a batch of excellent photos. The type never did make it into mass production or into operational service. A flyable example survived to be test flown by Captain "Winkle" Brown who was pleasantly surprised by the Bv 141's performance, declaring it to be a far better aircraft than its reputation suggested.

The next chapter on the Bv 141's Technical Description is a real gem and occupies most of the book. The vast majority of the pages are covered with technical drawing and photos illustrating all aspects of the aircraft. Thankfully, English translations have been added to the key captions to the diagrams. Anyone building one of the few Bv 141 kits will find the drawings very useful. As will the contents of the next chapter on Camouflage and Markings. Several pages of explanatory copy are supported by sets of colour profiles by Richard J. Caruana. Profiles give us a better impression of quite a 'racy' aircraft than can be seen in the photographs.

As hinted at earlier, kits of the Bv 141 are very few in number. Airfix produced one in 1:72 some years ago that has been reissued two or three times and a small handful of limited run kits have appeared since. A new 1:48 kit from HobbyBoss takes a small step towards adjusting the balance. Steve A. Evans takes on the kit for a quick four-page build review. At the end, Steve is very complimentary on the experience the HobbyBoss kit brings. Those who would like to take on the kit will be happy with the result. Good luck with the canopy masking.

As is tradition, the final section is the appendix showing lists of kits, accessories, decals and books. Normally, this can run to several pages of lists but in the case of the Bv 141 occupy only a single page.

Those looking to build something strange and interesting may choose a Bv 141 and if so, will find this new Valiant Wings book very interesting. Failing that, the book is a good read telling how aircraft designers don't always get it right. In more normal times, the Bv 141 design would have been abandoned very quickly perhaps?

We thoroughly recommend this book, another great piece of work from the Valiant Wings team.

Section 3
Building a Bv 141

VALIANT WINGS PUBLISHING

The Henschel Hs 129

A Detailed Guide to the Luftwaffe's Panzerjäger - Airframe Album 17

valiant-wings.co.uk

- By Richard A. Franks
- Guide Price £19.95
- ISBN 978-1-912932-16-0
- 128pp softback, 297 x 210mm

This Hs 129 is a brand-new addition to the Valiant Wings Airframe Album series describing the Luftwaffe's WWII equivalent of the A-10 Thunderbolt of today's USAF.

The Hs 129 was about the same size as a de Havilland Mosquito and had a troubled history. Much was learned by the Luftwaffe by its experience when taking part in the Spanish Civil War. An important lesson learned was the fact that dive bombing and ground attack were tasks for different aircraft. Early Stuka designs made good dive bombers but not nearly effective enough when used to support ground troops. Therefore, the Luftwaffe commissioned designs for its ground attack aircraft in the late 1930s. This book's first chapter tells of a less than straightforward search for such an aircraft. The text tells of some amazing 'schoolboy' errors that took place such as a cockpit that was so small that there was not enough room to move the stick properly resulting in the loss of an early example. There was such a shortage of space that some instruments were mounted outside the cockpit on the rear of the engine nacelles.

The next chapter is the detailed Technical Description that extends to over forty pages of information. Many diagrams from technical manuals are reproduced with supporting photos. All of this is great if building a kit, especially the Zoukei-Mura 1:32 kit with its masses of internal detail. Every good tank-buster needs an impressive gun and the one under the Hs 129 was a great piece of 7.5 cm artillery. It and the other armament is shown in detail in this chapter. All aspects of the aircraft are covered even down to the arrangement of the tie-downs and canvass covers to prevent damage when operating away from the shelter of hangars.

The next chapter is another that will be very useful to anyone with a Hs 129 kit on the bench. It shows the development of the aircraft through time in excellent diagrams with captions pointing out the changes, large and small from type to type. A small modification to your kit can result in a model of a different sub-type.

Colour & Markings comes next with twenty pages of ideal reference material in the form of copy, photos and lovely colour artwork profiles by Richard J. Caruana. 129s were used widely by the Luftwaffe from North Africa to deep into Russia and Northern Europe so many camouflage schemes were applied to fit the conditions. These were also modified at times to take account of winter's snowy conditions. At the end of the chapter, we see examples used by the Royal Rumanian Air Force and captured aircraft tested by the RAF. Some of the camouflage patterns were applied with scant thought for anyone trying to apply them to a 1:72 model three quarters of a century later. They will test airbrush skills and patients into infinity and beyond.

Chapter 4 turns our attention to modelling with a set of full-build reviews of Hs 129 kits. Despite the aircraft's chequered history, kit manufacturers have been fairly good to the type with kits in all of the popular scales with oddly, the exception of 1:144. The reviews take an honest look at the now, elderly but excellent Hasegawa 1:48 kit, several pages on the astonishing 1:32 Zoukei-Mura Hs 129B-2/R3 and a single page quick look at the 1:72 Revell B-2. It is fair to say that the Zoukei-Mura kit moves plastic model building to another level in both skill and concentration needed and the depth of one's pockets. Steve A. Evans gives both the Hasegawa and Z-M kits glowing reviews.

As usual, at the end of the book we find the appendix listing kits, accessories, decals and books on the aircraft. Rather than the usual fold-out plans we find sets of 1:72 Hs 129 plans occupying the final six A4 pages.

This is another great book from the Valiant Wings team. It is very interesting in its own right but makes a great value reference source for anyone building a kit. Another book produced by modellers for modellers. Their next book in this series, just announced, will be a welcome second edition of No. 1 which was on the Heinkel He 219 'Uhu'. This may be available by the time you read these words.

Thanks again to Valiant Wings for supplying their latest titles for review. See the Valiant Wings web site: valiant-wings.co.uk for ordering and availability or visit your favourite specialist book traders such as Avid Reader/Bookworld Wholesale (bookworldws.co.uk). Hannants also stock Valiant Wings titles. Buy the kit and the book.

WINGLEADER PHOTO ARCHIVE NUMBER 9
MILAN KRAJČI
MESSERSCHMITT Bf 109E

RED KITE / WINGLEADER

Messerschmitt Bf 109E

Units in the Battle of Britain Part Three – JG53, JG54, JG77, LG2, EprGr210

wingleader.co.uk

- By Milan Krajči
- Guide Price £19.95
- ISBN: 978-1-906592-72-1
- 72pp softback, 210 x 297mm

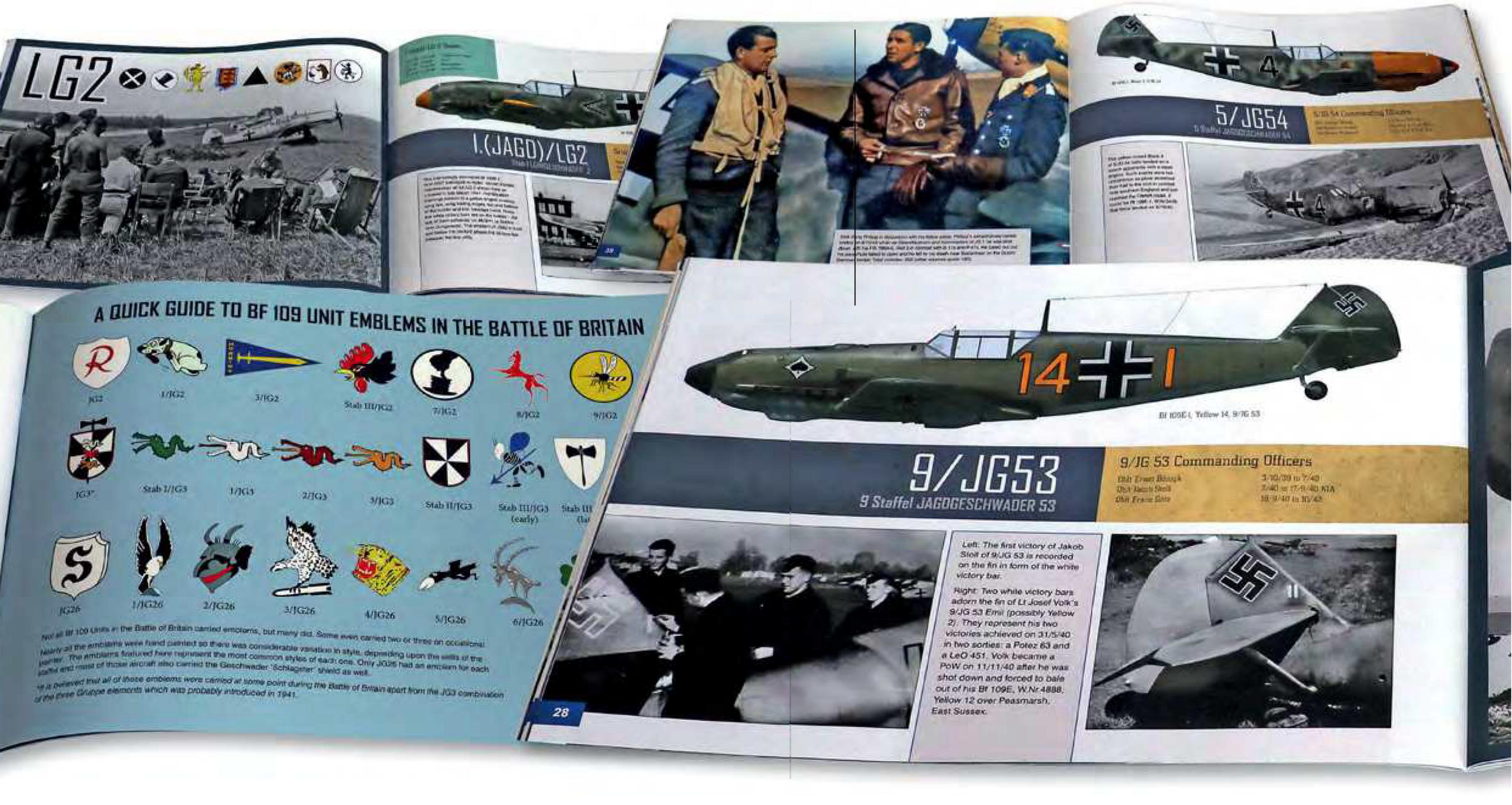
This book is the third volume in a set of three books on the Bf 109E in the Battle of Britain. Much of the information published in these three books has been waiting to see the light of day for a while. It is only recently that sufficient good photos have been discovered that made publishing the series viable. Anyone seriously looking at building 109 models will have seen the bewildering number of different styles of camouflage and markings. These books explain the thinking behind the Luftwaffe's choice of schemes and identification insignia where possible. Artist and Series Editor, Mark Postlethwaite explains in his introductory notes that there are times when the Luftwaffe's thinking on markings defies explanation. It must be remembered that the lovely colour profiles are often based on the artist's interpretation of a black and white photo. It is worth mentioning that some of these photos are superb and look as if they were taken yesterday.

As you would expect most of the Bf 109 photos are in black and white but there is a number of colour photos scattered throughout the book. On most pages there is a colour artwork profile, many illustrating the black and white photos that appear on that page or the facing page. All of the photos are accompanied with very good captions explaining the photo's contents and many names of the individuals shown. Inevitably there is a good number of photos of crash landed 109s, on both sides of the English Channel. When damaged, Luftwaffe pilots would as a first choice try to make it back to France but many pilots came down on English soil and were to spend the rest of the war safely in captivity.

Examples of the many different Bf 109 schemes are shown and explained. Bf 109s all had their noses and rudders painted yellow part the way through the Battle of Britain and there is the odd short-lived change from yellow to white and quickly back to yellow. Modellers will see some challenging finishes illustrated in these pages.

This is an excellent profile on the Battle of Britain Bf 109s with the featured units. Whether you are fascinated by the aviation history of this period or looking for guidance on schemes to apply to a kit you are going to find this book useful and interesting. Highly recommended.

Thanks to Wingleader for supplying their number nine in their Photo Archive series for review. See wingleader.co.uk for ordering or specialist book suppliers such as Bookworld Wholesale/Avid Reader who are the UK distributor of Red Kite/Wingleader books.



Not all Bf 109 Units in the Battle of Britain carried emblems, but many did. Some even carried two or three on occasional. Nearly all the emblems were hand painted so there was considerable variation in style, depending upon the skills of the painter. The emblems featured here represent the most common styles of each one. Only JG26 had an emblem for each staffel and most of those aircraft also carried the Geschwader 'Schlageter' shield as well.

It is believed that all of these emblems were carried at some point during the Battle of Britain apart from the JG3 combination of the three Gruppe elements which was probably introduced in 1941.

Left: The first victory of Jakob Stoll of 9/JG 53 is recorded on the fin in form of the white victory bar.

Right: Two white victory bars adorn the fin of Lt Josef Volk's 9/JG 53 Emil (possibly Yellow 2). They represent his two victories achieved on 31/5/40 in two sorties: a Potez 63 and a LeO 451. Volk became a PoW on 11/11/40 after he was shot down and forced to bale out of his Bf 109E, W.Nr.4888, Yellow 12 over Peasmarsh, East Sussex.

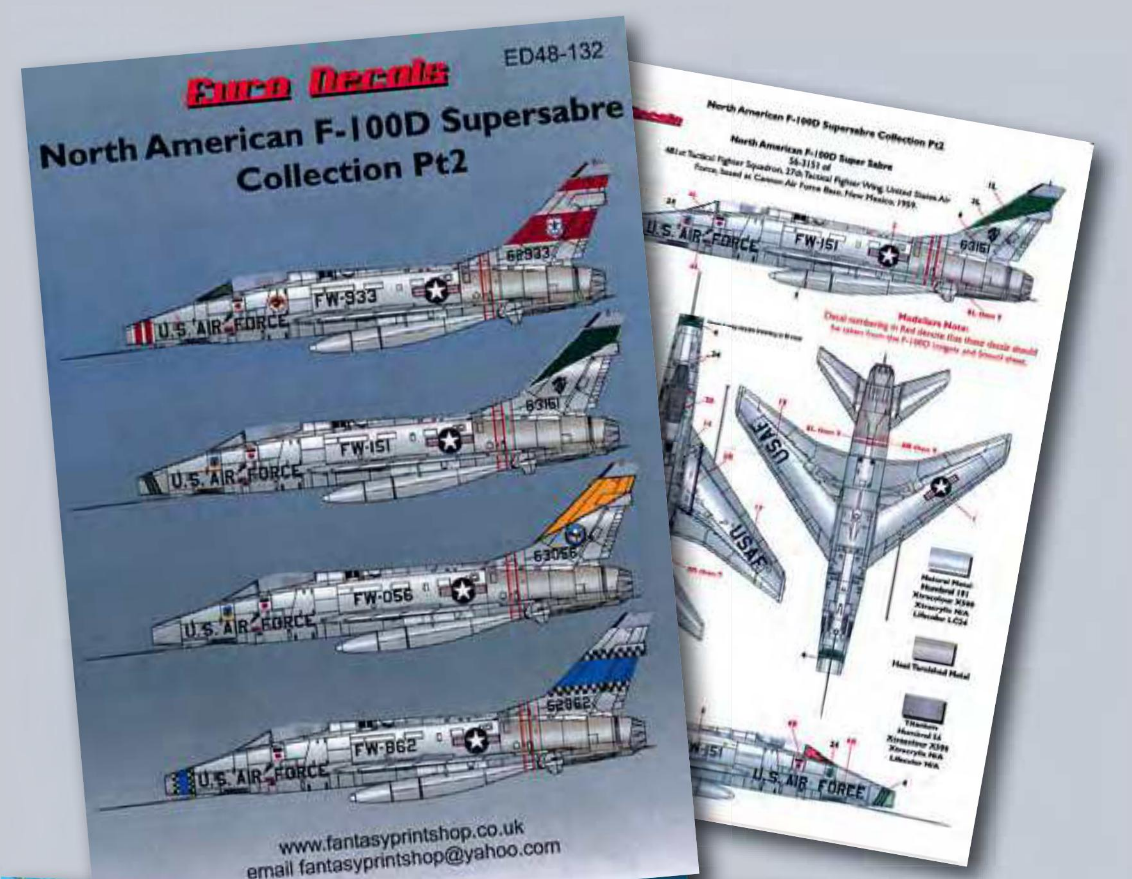
TRANSFER LIST

Written by Alan Firbank.

EURO DECALS FROM FANTASY PRINTSHOP

www.fantasyprintshop.co.uk

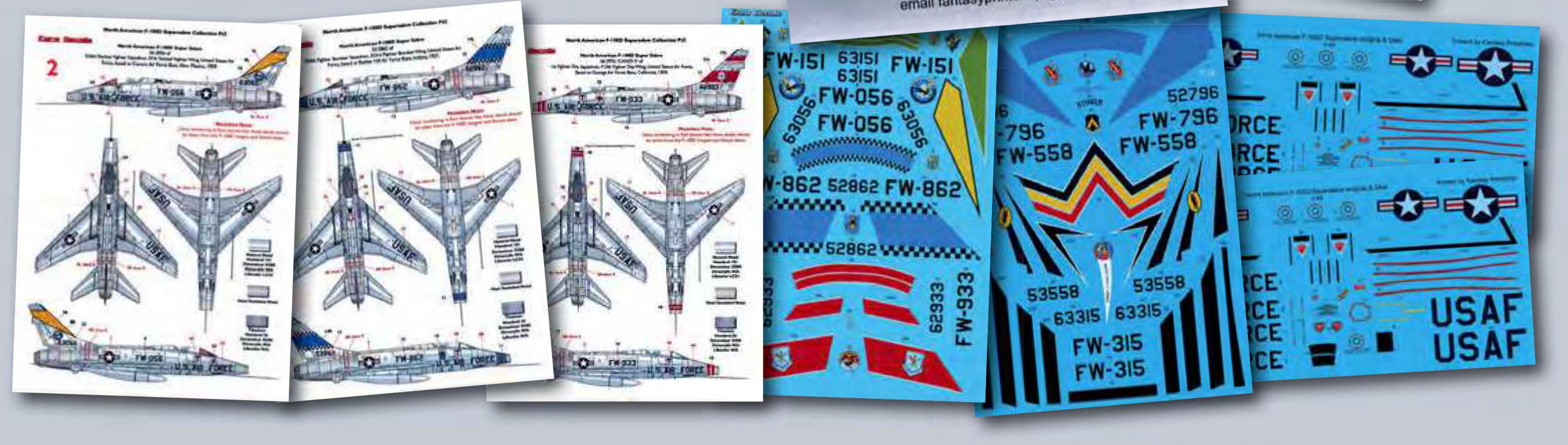
We are always pleased to open envelopes containing decal samples to introduce to you, our readers. This month we see decal sheets for 1:48 and 1:72 F-100D Supersabres, an enlarged version of their earlier 1:72 sheet and a pair of new sheets for three more F-100Ds in 1:72 and 1:48.


Euro Decals
ED48-132
North American F-100D Supersabre Collection Pt2
www.fantasyprintshop.co.uk
email fantasyprintshop@yahoo.com

NORTH AMERICAN F-100D SUPERSABRE COLLECTION PT 2 (SHEET NO. ED-48132)

Here is a great second set of markings for four USAF Super Sabre F-100Ds in overall natural metal finishes. The decals arrive on two sheets, one with the individual aircraft markings and a generic sheet with stars and bars, stencilling, etc. The instructions are very good with each subject shown in four views on an A4 sheet.

1. F-100D 56-3151 with the 481st Tactical Fighter Squadron at Cannon AFB, New Mexico in 1959. There is a Green triangle on the tail fin and Green bands around the nose air intake.
2. F-100D 56-3056 with the 524th Tactical Fighter Squadron, also at Cannon AFB in New Mexico in 1959. Rather than a Green flash on the tail fin, this F-100D carried a Yellow one.
3. F-100D 55-2862 with the 454th Fighter Bomber Squadron at Bunker Hill AFB, Indiana in 1957. This Super Sabre carried a broad Blue band on the tail fin with a row of Black checkers top and bottom. This pattern is repeated around the nose.
4. F-100D 56-2933 'Candi II' with the 1st Fighter Day Squadron at George AFB, California in 1959. There are two wide Red bands with a White border on the tail fin with a matching pair around the nose. Small 'Candi II' nose art appears below the canopy.


FW-151
63151
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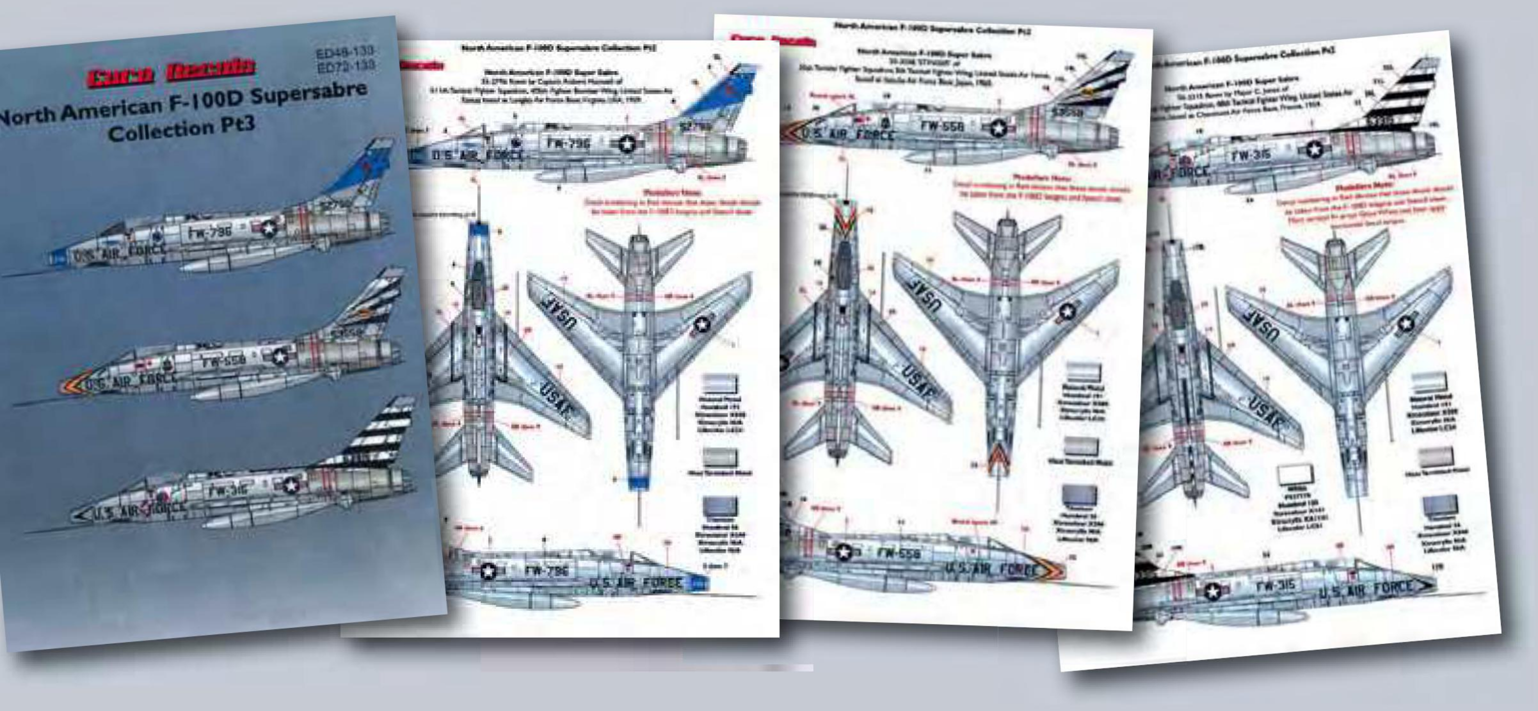

Euro Decals
ED48-133
ED72-133
North American F-100D Supersabre Collection Pt3

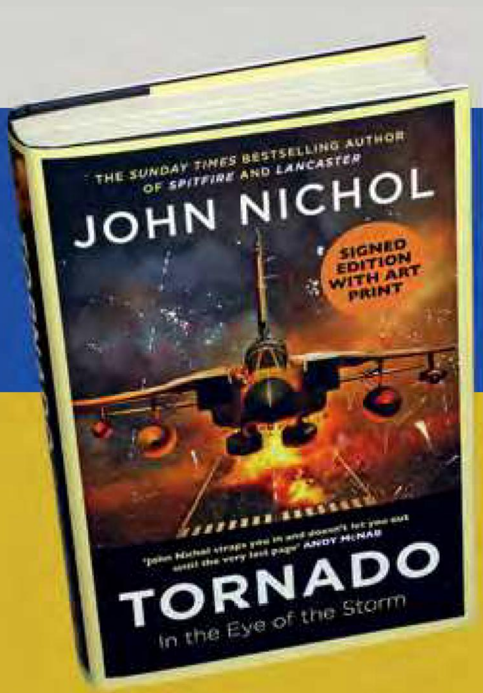
NORTH AMERICAN F-100D SUPERSABRE COLLECTION PT 3 (SHEET NO. ED-48133)

Another three colourful Sabres all in overall natural metal finishes. The markings are large so only three sets will fit on an A5 decal sheet. The stencilling items for one of the schemes is supplied on a separate half size sheet.

1. F-100D 55-2796 with the 511th Tactical Fighter Squadron at Langley Air Force Base, Virginia in 1959. A large Pale Blue triangle appears on the tail fin with a matching band around the intake.
2. F-100D 55-3558 'STINGER' with the 35th Fighter Squadron at Itazuke Air Force Base in Japan in 1960. There are three Dark Blue outlined in White chevrons on the tail fin and bands of Dark Blue, Yellow and Red separated by White around the intake.
3. F-100D 56-3315 with the 492nd Tactical Fighter Squadron at Chaumont Air Force Base in France in 1959. Much of the tail fin is painted White with Black bands supplied on the decal sheet with a matching chevron on the nose.

IN PRINT

This month we depart from the normal pattern of book reviews. Usually, the books we receive are 80% aimed at modellers, ideal for modelling reference and 20% at the aircraft enthusiast. This time, the bias is the other way around with more reading than actual modeller's reference material. Books that you may pick up and read as your model's paint dries or pick up rather that throw your part-built project, that is trying your patience beyond limits, up the garden.


THE SUNDAY TIMES BESTSELLING AUTHOR OF SPITFIRE AND LANCASTER
JOHN NICHOL
SIGNED EDITION WITH ART PRINT
'John Nichol straps you in and doesn't let you out until the very last page' ANDY McNAB
TORNADO
In the Eye of the Storm

SIMON & SCHUSTER

Tornado – In the Eye of the Storm

https://www.simonandschuster.com

- By John Nichol
- Guide Price £20.00
- ISBN 978-1-4711-8052-1
- 474pp hardback, 240 x 160mm

We have read and very much enjoyed John Nichol's last two books on the Spitfire and Lancaster so we did not hesitate when we saw his new book on the Tornado appear recently. Spitfire and Lancaster were very readable and difficult to put down. Both books covered each aircraft from the point of view of those people who were connected to them. Stories from those that designed, built the aircraft, those that flew them and maintained them.

John Nichol's latest book is a little different, this time its personal. We are sure that many readers will be familiar with the fact that John flew many hours as a Tornado navigator. While on a bombing attack on an Iraqi airfield, the Tornado's first daylight mission, John and his pilot, John Peters were caught by a shoulder launched anti-aircraft missile as they departed the target. The missile flew into one of the Tornado's engines and exploded. Their aircraft flew on for a short time but the resulting fire spread quickly and the crew ejected before the inevitable crash. The two Johns were soon taken prisoner and the harrowing account of what happened next is described in this book.

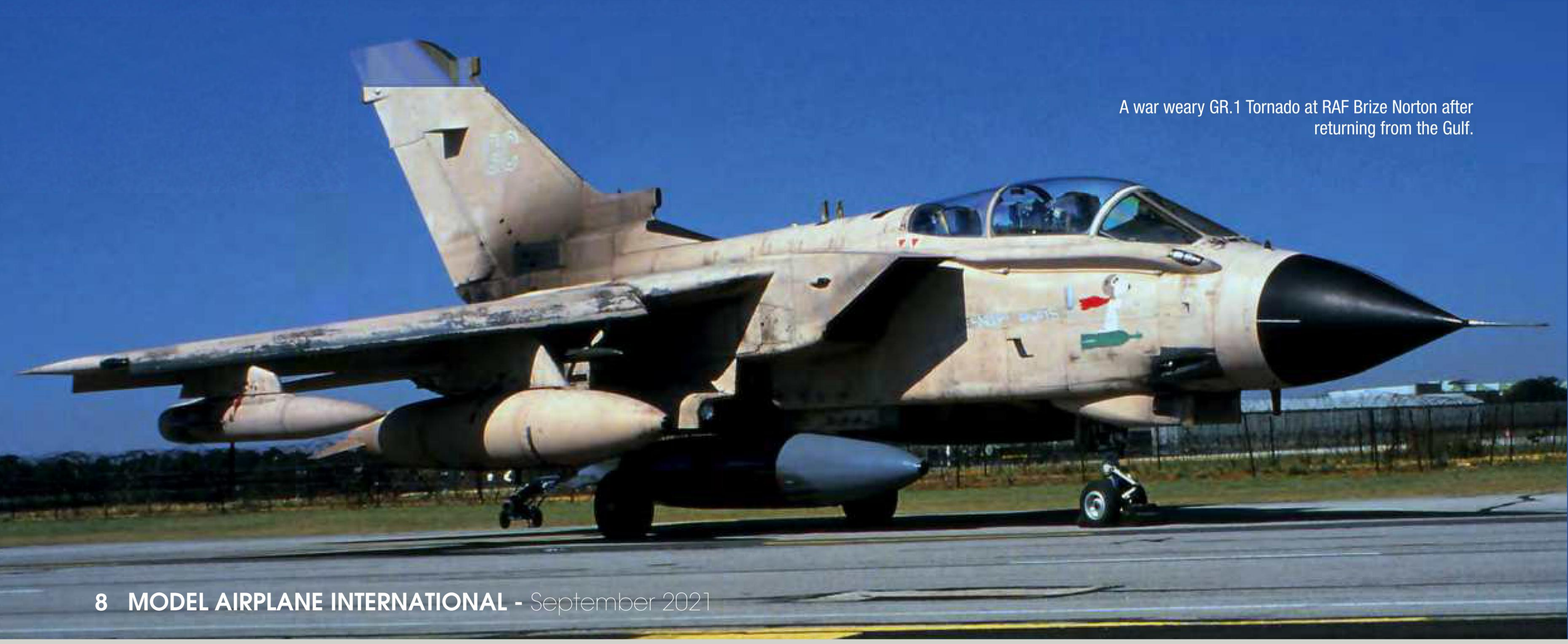
The book begins with the Tornado's development by the British, German and Italian aircraft industries and the early years of its service in the defence of NATO from the Soviet threat. Several RAF bases in Germany were on 24-hour readiness. The Tornado force trained hard, preparing for the possible day when a Soviet force began to attack through Western Germany. Tornado would take over as the RAF's main contribution to the defence of NATO as the Vulcans and Canberras were being withdrawn from service. Tornado was designed to be a low-level fighter bomber capable of attacking under enemy radar, the only way at that time of replying to an attack. Low level flying, probably at night, would be essential.

John Nichol's book then goes on to describe the months in summer 1990 after Iraqi leader Saddam Hussein sent his forces into neighbouring Kuwait and occupied the country. Operation Desert Shield began In August 1990 with the rapid deployment of coalition ground, air and naval forces. Following the Iraqi invasion of Kuwait, diplomatic and military pressure was applied to Saddam Hussein to withdraw. An international force was built up in the region in the hope that Iraq would backdown and leave Kuwait. John Nichol describes how the RAF and the Tornado force would begin to plan and train for the mission ahead. While the hope was the Iraqi government would back down, in the event of that not happening, RAF Tornados would be in the middle east and ready should war begin.

During the training phase of Desert Shield, John Nichol describes how Tornado crews are risking their lives, preparing for the hazardous missions ahead. He introduces us to some of the air crew and their families. While we love to build models of the aircraft it is easy to forget that these are weapons of war. They deliver a deadly load to the enemy and are flown by brave crews who leave behind families who only hope and pray that their loved ones remain safe and come home.

John Nichol describes in frightening detail what it was like to step into a Tornado and fly with a full load of bombs to attack airfields in Iraq. The RAF's mission was to stop the hundreds of Iraqi aircraft from leaving the ground, keeping the coalition ground troops safe from air attack. Until reading this part of the book we had no idea that Iraq had such a vast amount of anti-aircraft equipment in the form of AAA and SAM missiles. The stresses on the air and ground crew during the first days of Desert Storm is an echo of those described in books on the RAF's bombing campaign in WWII. Flights of eight Tornados leave on their mission and one does not return. Those surviving air crew now know what to expect the following night and then another jet fails to return to base. The stress and anguish of all concerned and their families at home is unbelievable. While other coalition aircraft are being lost, the Tornado force is suffering a much higher rate of attrition because of their more dangerous, low level night attacks on heavily defended targets.

The parts of the book that describe how the Iraqis treated the air crew that were shot down and survived makes difficult reading. In the case of the Two Johns, they were tortured and then made to appear in short propaganda television broadcasts that were passed to


A war weary GR.1 Tornado at RAF Brize Norton after returning from the Gulf.

SAMPLES FOR REVIEW

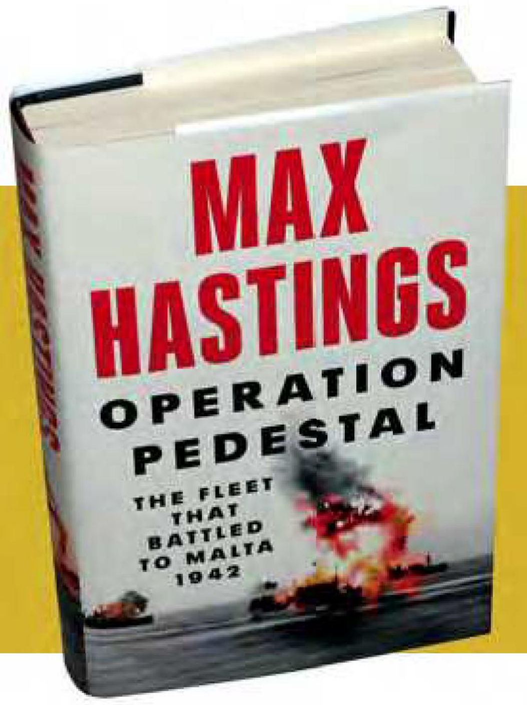
Please send all items for review to the following address: Model Airplane International, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire, LU6 1QX, United Kingdom. Companies in the European Union should also add our VAT number, which is GB 789 7020 84

CNN. Those forced statements made in the clips by John Peters and John Nichol were flashed across the world's news channels and press. Seeing them was the first time that anyone outside of the Iraqi military knew that they were still alive. We can only begin to imagine the mix of emotions amongst their families, friends and colleagues on seeing the footage. Relief that they were still alive and horror at the battered state they were in.

This story is one where we are eager to learn about what happens next. John Nichol's words flow easily and keeps us on the edge of our seat. A new impression of the Gulf War soon forms and we learn that no matter how good the aircraft, the vital parts are the two brave officers sitting in the cockpit. In the final chapter, we are brought to the end of the Tornado's RAF career with a hangar full of past and present Tornado people, gathered to celebrate a great aircraft and the brave people who flew and maintained them. On 14 March 2019 RAF Tornados, in special paint schemes, Tornados performed their final flights and an amazing chapter ended. The deserved fanfare could not take place because of the ongoing pandemic. As well as seeing the aircraft pass into history, we are brought up to date with some of the Gulf War flyers and families, telling what happened when the war ended.

This is another excellent work from the pen of John Nichol, a real page-turner that sheds more light on the Gulf War, Tornado and the people who operated it in almost 40 years of RAF service. You must be made of tough stuff if you don't get a moist eye at some point when reading this great book. Thoroughly recommended.

Alan Firbank, August 2021



WILLIAM COLLINS

Operation Pedestal

The Fleet that Battled to Malta 1942

https://www.williamcollinsbooks.co.uk

- By Max Hastings
- Guide Price £25.00
- ISBN 978-0-00-836494-6
- 464pp hardback, 240 x 160mm

Max Hasting is one of our favourite authors and continues to turn out roughly a new book each year. His last one was Chastise, The Story of the Dambusters Raid and the one before that, Vietnam: An Epic Tragedy. To date, Max Hastings has written about 15 books on conflicts of the 20th century.

Those who watch programmes such as WWII in Colour will have an idea of the desperate situation in which Malta found itself in 1942. Germany and Italy were desperate to get their hands on Malta, situated ideally half-way between Italy and North Africa. While Malta was used as a base for Allied aircraft and shipping it was causing great difficulties for the Axis nations. Italian and German progress with the war was slowed while the British held Malta. In an effort to take Malta, German and Italy laid siege to the island preventing the delivery of arms, fuel and food to the population. Malta was also under constant bombing attacks from the air. A massive effort, an almost suicidal mission, would be needed to relieve Malta and save the islands from enemy occupation.

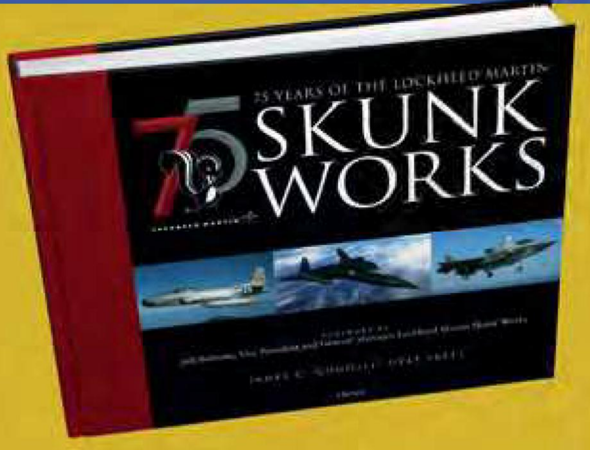
One of the largest Royal Navy fleets deployed in the war so far was assembled, an attempt to shepherd fourteen merchant ships from Gibraltar to Malta, carrying desperately needed food, fuel and goods to sustain the island. The Royal Navy escorts amounted the largest collection of ships deployed since the Battle of Jutland in 1916. As well as the produce for the islanders the convoy was also carrying Hurricanes and Spitfires that would operate from carriers during the voyage, protecting the convoy and then protecting Malta on arrival. Determined to prevent the convoy making it safely to Malta was a vast number of Italian and German aircraft, surface ships and submarines. On the first day of the convoy's progress an enormous blow came in the form of the loss of aircraft carrier HMS Eagle which sank after being torpedoed by a German U-boat. The other three Royal Navy carriers, HMS Victorious, HMS Furious and HMS Indomitable all survived the voyage and delivered their aircraft. During the five-day voyage, the convoy came under some of the most brutal attacks of WWII. Approximately 17 of the ships in the convoy were either sunk or badly damaged.

Max Hastings' latest book tells the story of this convoy from the points of view of those who took part from Winston Churchill to the Admirals, Captains, down to the Royal Navy and merchant seamen and Fleet Air Arm airmen. Similarly personal contribution come from some Axis participants in the action. As well as the sinking of HMS Eagle and the resulting struggles to rescue survivors, all other ships were subject to constant attacks as the convoy progressed along the Mediterranean. There is a list of losses per day on the front and back cover end papers. A fuel tanker, MV Ohio was so badly damaged in several attacks that the ship had to complete its journey lashed between two battleships to prevent it from sinking.

There are four sets of photographs at intervals throughout the book showing some of the spectacular action and portraits of some of the individuals that took part. One photo shows HMS Eagle listing badly just before she sank following a torpedo strike.

Max Hastings concludes his book with notes on what happened to some of the personalities and vessels that took part in Operation Pedestal. Many of the skippers of the surviving merchant ships continued with their careers at sea until they retired and some of their vessels that made it through the war had their shipping line owners' paintwork restored and went back to their peacetime duties.

Max Hastings continues to bring us the best wartime history books, carefully researched and well-written. We present you with another great work in the best Hastings tradition. Highly recommended to those interested in both the war in the air and on the sea. If you get the chance to see a Max Hastings presentation now that literature festivals and book signings could return, you will find his talks fascinating and entertaining.



OSPREY PUBLISHING

75 Years of The Lockheed Skunk Works

http://www.ospreybublishing.com

- By James C. Goodall, USAF (Ret.)
- Guide Price £50.00
- ISBN 978-1-4728-4647-1
- 384pp hardback, 250 x 308mm

Osprey produces many books that are ideal for modellers at pocket money prices, as can be seen on their regular stall at Telford each November. This hefty volume is a big step away from their familiar product. By hefty we mean the books weighs in at two and a half kilos or over 5lb. in 'old money'. You are going to need deep pockets and a strong bookshelf if you are going to take-on this excellent book.

Firstly, as you may expect, the standard of production is the highest, beautifully printed on satin art paper. All photos have been carefully selected for quality and we are seeing the vast majority for the first time. A very few will be familiar where they have been used in publicity material. Three pictures on the front cover give a hint of what is between the covers with a P-80 Shooting Star, the SR-71 Blackbird and F-35B Lightning II. Those three aircraft largely cover the time span illustrated in this book.

Many of the aircraft (and one ship) profiled in this book will be familiar to most readers but there are a few that we have never seen before, with strange-sounding names such as Senior Prom ATCM. Skunk Works is famous for being very secretive about their products. F-117A Nighthawk (YF-117A Senior Trend) is probably the best-known example of this, at times clandestine company. The first Nighthawk flight took place on 18 June 1981 and the air force would continue to deny its existence until 1988 when the first poor photo was released to the media. F-117A Stealth Fighter, that is actually not a fighter but a tactical bomber would have an effective combat career, serving in several combat zones, notably in Iraq.

While on the topic of F-117A, we will mention the only ship project shown in this book, Sea Shadow IX-529. The experimental ship looks like a cross between an F-117A and something from the 1960s sci-fi film series, Voyage to the Bottom of the Sea featuring the futuristic submarine "Sea View". Again, this project was kept under wraps for eight years before being revealed to the public. Although Sea Shadow was not put into production, it would prove how effective the stealthy ship design concept would be when incorporated into the latest designs of warships.

There are about 45 projects described in this book from the Shooting Star to recent 'paper' designs that may be being worked on now, such as the SR-72 and a series of drone designs and even airships. Compact Fusion power plants could supply power to up to 100,000 homes or power a C-5 Galaxy and keep it flying non-stop for a year or ocean-going ships and inter-planetary space vehicles. A trip to Mars could be reduced to a month using Compact Fusion propulsion.

We see the development of famous aircraft such as the C-130 Hercules, F-104 Starfighter, the SR-71 Blackbird, U-2R Dragon Lady, the F-22 Raptor and more recently the F-35. Not every project would turn into gold, there is the SST L-2000 supersonic air liner and the AH-56A Cheyenne attack helicopter that suffered from initial technical difficulties and an adverse political environment. Apache would be the US Army's chosen attack helicopter and Cheyenne would fall by the wayside.

Each project section begins with a technical specification page and a page of background text followed by several pages of photos with excellent captions, in the case of the F-117 we find about a dozen pages of photos. Sea Shadow is described over six pages. One project that we have not seen before is the Cormorant, a drone that is intended to be launched from a submarine. It looks neither like a boat nor an aircraft. After completing its mission, it lands back on the water and waits to be picked up by the host vessel from which it was launched and then stored back in its launch tube. About 50 pages are dedicated to the Blackbird and its allied projects such as the A-12 Oxcart, the YF-12A and the D-21Tagboard/Senior Bowl drone. With Revell's 1:48 SR-71 Blackbird due later this year there are some great reference photos, bare metal Blackbirds for example.

This is an amazing book and a work that is a credit to the author and the publisher. Almost every page contains new and fascinating facts and photos. Even at the cost of £50 it is still around the same price of a 'good' kit, half the price of the big Italeri GR.4 Tornado and in our view great value for money.

Highly Recommended.

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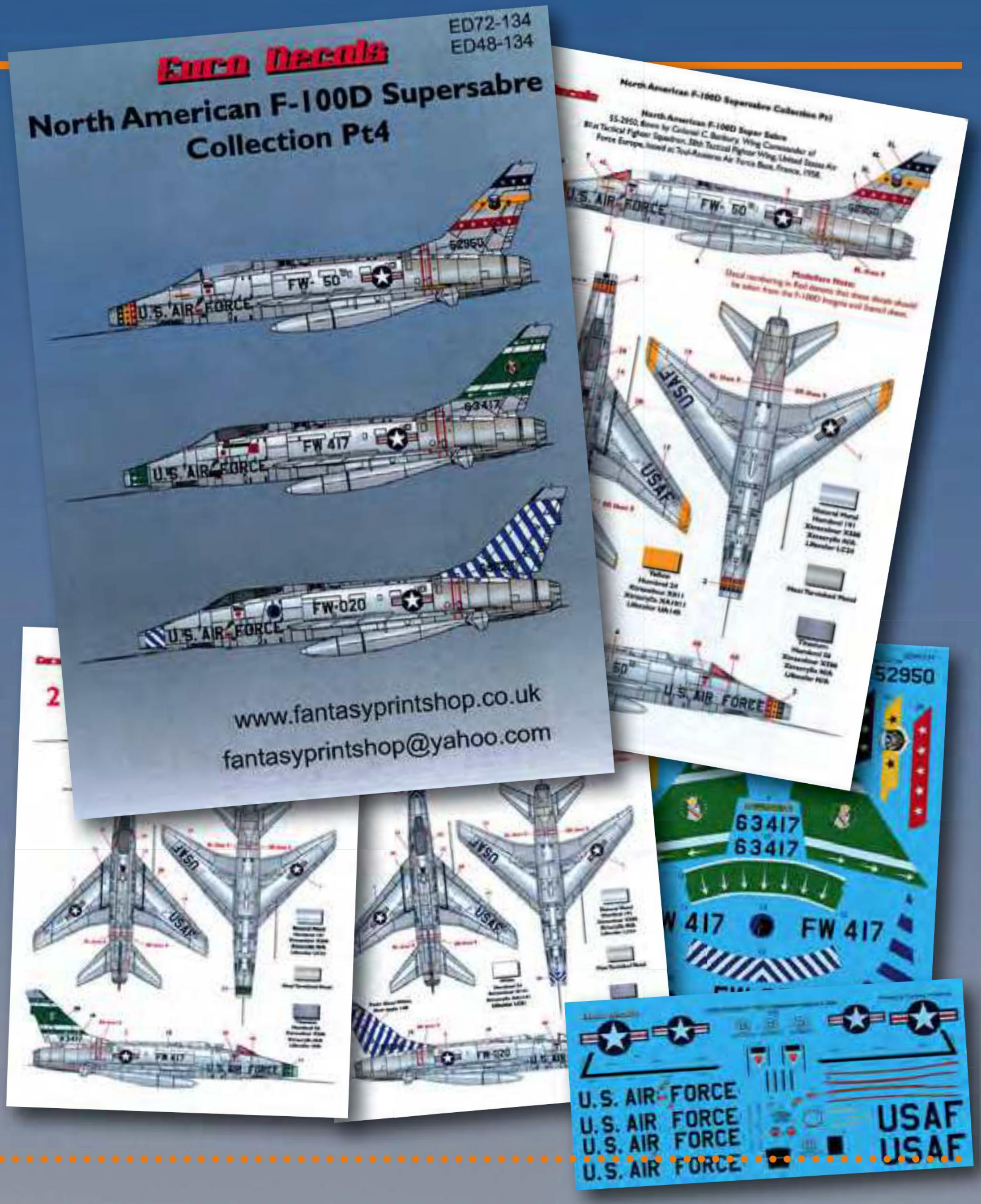
TRANSFER LIST

Written by Alan Firbank.

EURO DECALS FROM FANTASY PRINTSHOP

www.fantasyprintshop.co.uk

We have been reviewing new F-100D Super Sabre decals on almost a monthly basis. This month we have another set of three Super Sabre schemes in 1:72 and 1:48, Part 4 in the series.



NORTH AMERICAN F-100D SUPER SABRE COLLECTION PT. 4 (SHEET NO. ED72-134)

All three sets of markings are for USAF Super Sabre F-100Ds in overall natural metal finishes. The decals arrive on two sheets, one with the individual aircraft markings and a generic sheet with stars and bars, stencilling, etc. The instructions are very good with each subject shown in four views on an A4 colour printed sheet.

01. F-100D 55-2950 with the 81st Tactical Fighter Squadron, 50th TFW when operating from Toul-Rosieres Air Base in France in 1958. This aircraft is carrying special colourful markings of the Wing Commander. Bands of Blue, Yellow and Red appear on the tail fin and around the nose intake.

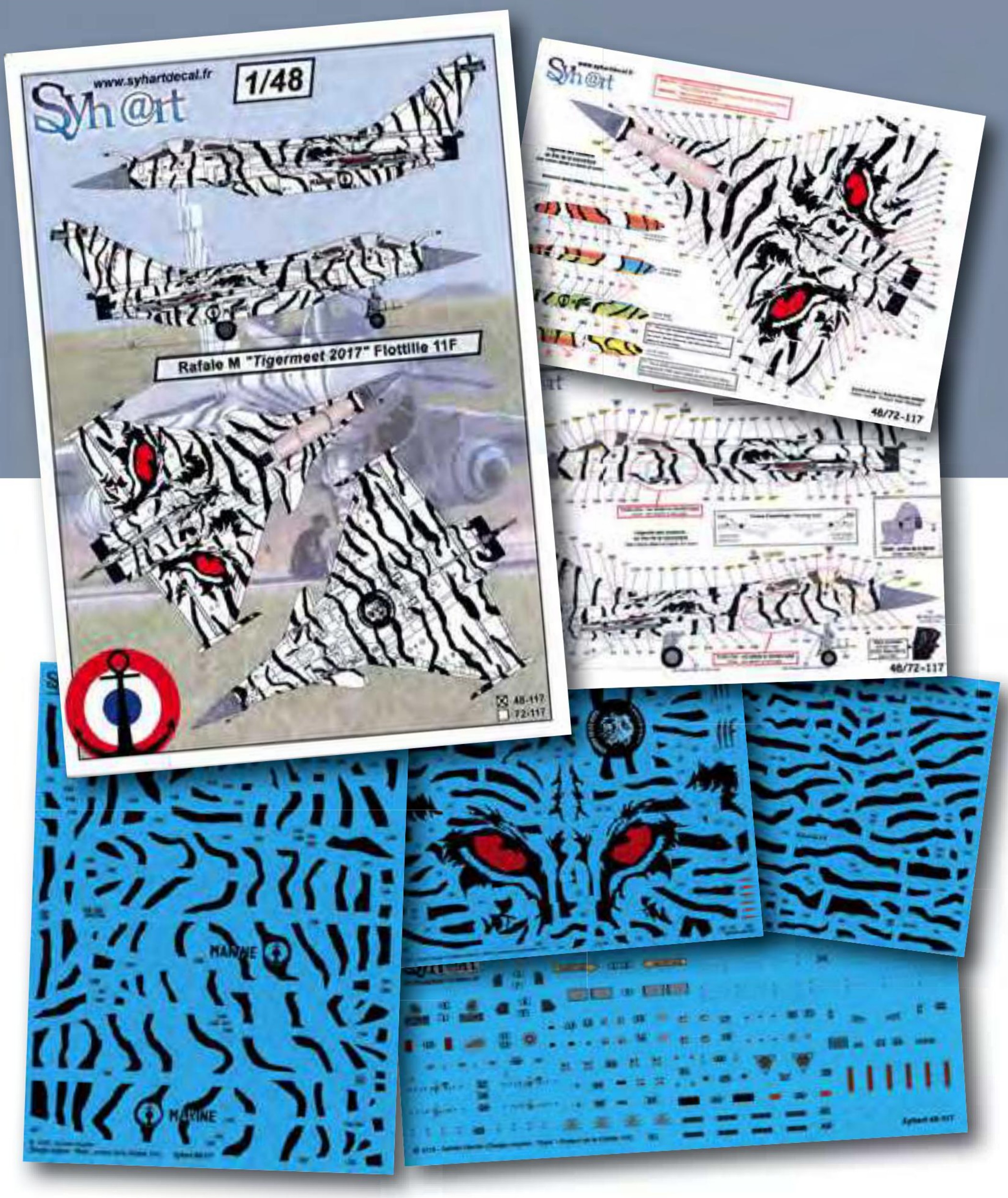
02. F-100D 56-3417 with the 356th Tactical Fighter Wing at Aviano Air Force Base at Aviano in Italy in 1960. There is a wide band of Blue and narrower White bands on the tail fin with a matching Blue/White band around the nose intake.

03. F-100D 56-3020 with the 390th Fighter Bomber Squadron, 366th Fighter Bomber Wing at England Air Force Base in the USA, 1957-59. The tail plane is painted White with diagonal Dark Blue decal stripes with a matching pattern on the nose intake.

North American F-100D Super Sabre Collection Pt. 4 (Sheet No. ED48-134)
This sheet is as the 1:72 above but produced on an A5 sized sheet with the separate generic national markings and stencilling.
The decals are well printed with a glossy finish and we love the blue carrier paper. Thanks to Fantasy Printshop for their latest sheets for review. See their web site for details: fantasyprintshop.co.uk or phone 01208 77772.

SYH@RT DECALS – RECENT SETS FOR 1:48 AND 1:72 RAFALE KITS

This French decal producer comes up with some excellent sheets from time to time featuring spectacular display schemes some of which were designed by Mr Syh@rt himself, Sylvain Hautier. After being quiet for a time, we have several sheets for French Rafales in 1:48 and 1:72 to introduce. As well as the fancy display schemes, we see sheets for the standard in-service aircraft too. The standard of printing of the decals is the highest and the instructions are second to none and the wording is in French and English. In each case we are reviewing the 1:48 version of the sheet so please note that the layout of the 1:72 sheets may differ however the content will be the same.

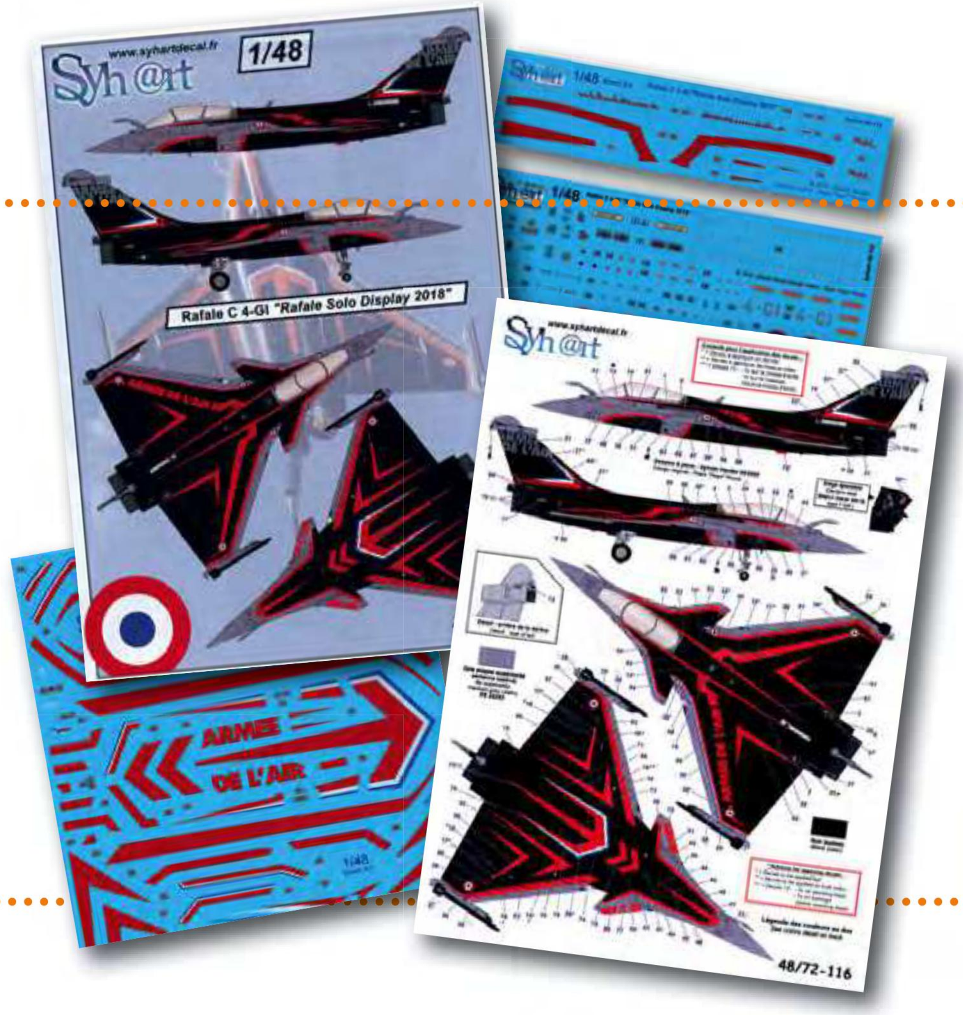


RAFALE M "TIGERMEET 2017" FLOTTILLE 11F (SHEET NO 48-117 AND 72-117)

This set of markings are for a naval Rafale that took part in the 2017 Tigermeet, the (normally) annual gathering of NATO units with tiger/big cat unit badges.

This Rafale is painted overall satin White, with the exception of the nose and radar warning pod on the top of the tail fin. All the tiger markings are supplied on the two A5-sized decal sheets and a small sheet carries the appropriate stencilling items. The instructions are printed in both French and English and are excellent. The decal placement instructions appear in four-view diagrams with two A5 pages of notes. Some parts should be left off the model until the decals are in place and some decals have to be applied before others. This is all listed in the text.

This is a lovely set of markings and although the base paintwork is very straight forward, decal application will take time and dedication to get right however the end result will be a real eye-catcher.

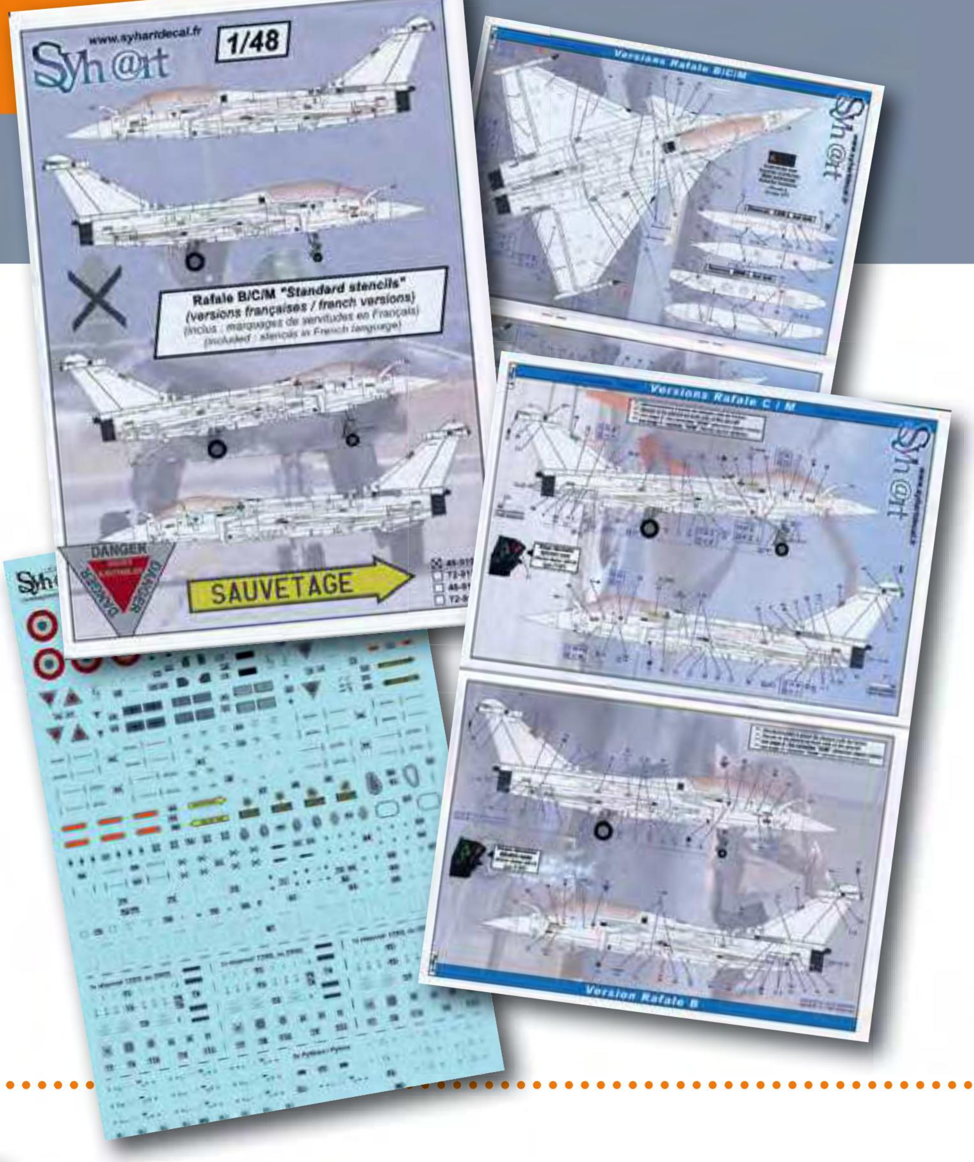


RAFALE C 4-GI "RAFALE SOLO DISPLAY 2018" (SHEET NO. 48-116 AND 72-116)

This 1:48 set for the French Air Force Solo Display jet consists of one large decals sheet, two small ones, one being covered mainly with stencilling items and a small sheet of masking material.

This will be another challenging scheme to apply. The jet is finished in FS26293 Grey with large areas of satin Black. After applying the base Grey a careful masking job follows using the instructions as a placement guide and then the satin Black comes next. Much of the Black area is bordered with the Red decals. It may be possible to use the decals to form a masking guide for the Grey areas. It looks like the decals are wide enough to cover any masking inaccuracy. The small sheet of masking material is used to replicate non-slip walkway areas on top of the fuselage, adjacent to the cockpit. After applying the pre-cut masks, the area is sprayed with a very matt and slightly lighter shade of the surrounding fuselage colour.

TRANSFER LIST

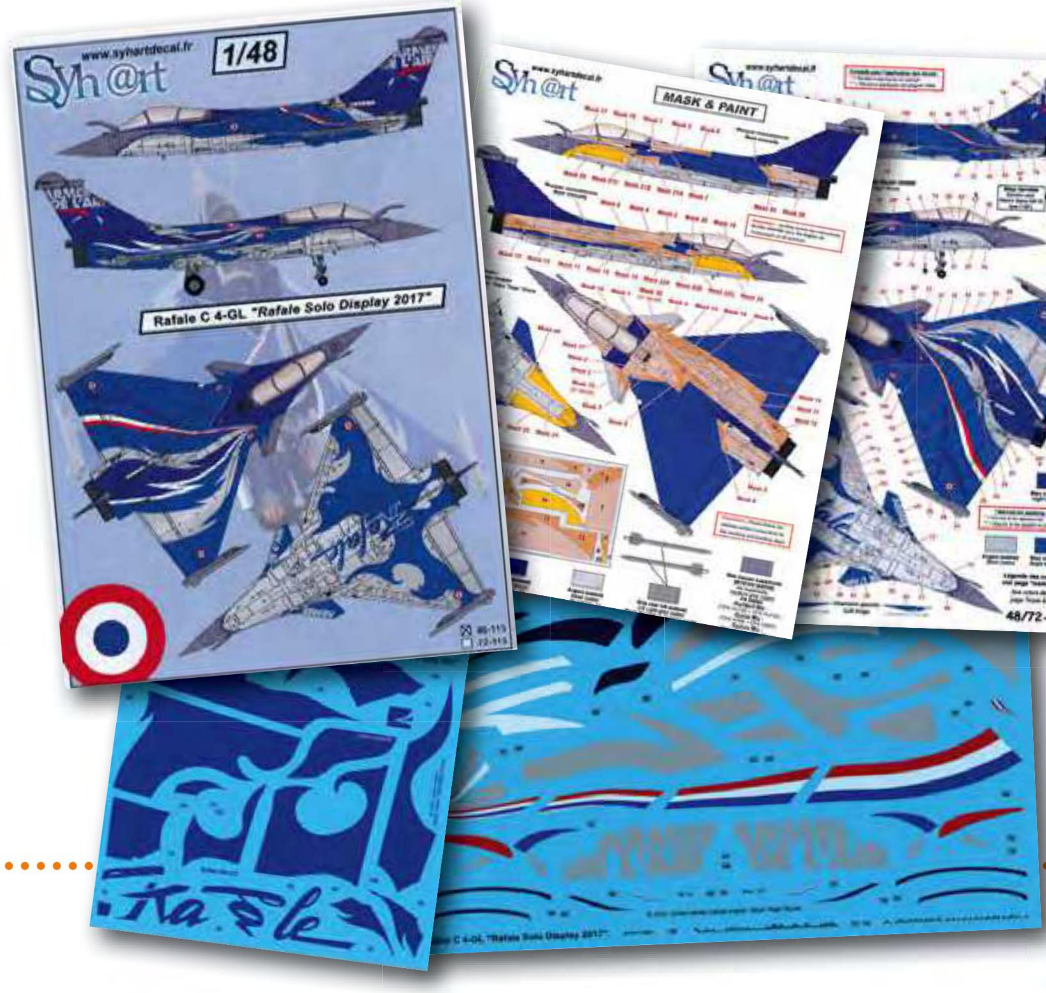


RAFALE C 4-GL "RAFALE SOLO DISPLAY 2017" (SHEET NO. 48-115 AND 72-115)

Here we have another stunning set of decals for a Solo Display Armée de l'Air Rafale. Inside the zip-lock bag we find two large decal sheets, a small correction sheet, a set of stencils, a small masking sheet for the anti-slip areas by the cockpit and a large masking sheet for areas of the airframe. It is worth noting that the masking sheets are 'kiss' cut so no scalpel work needed.

The instructions are excellent, coming on four sides of A4, showing where and how to apply the masks and paint. As well as the diagrams we are given written step-by-step instructions of how to go about the rather complex scheme. That advise begins rather surprisingly with an overall application of Bright Blue and ending with the Rafale's base Air Superiority Medium Grey coloured areas.

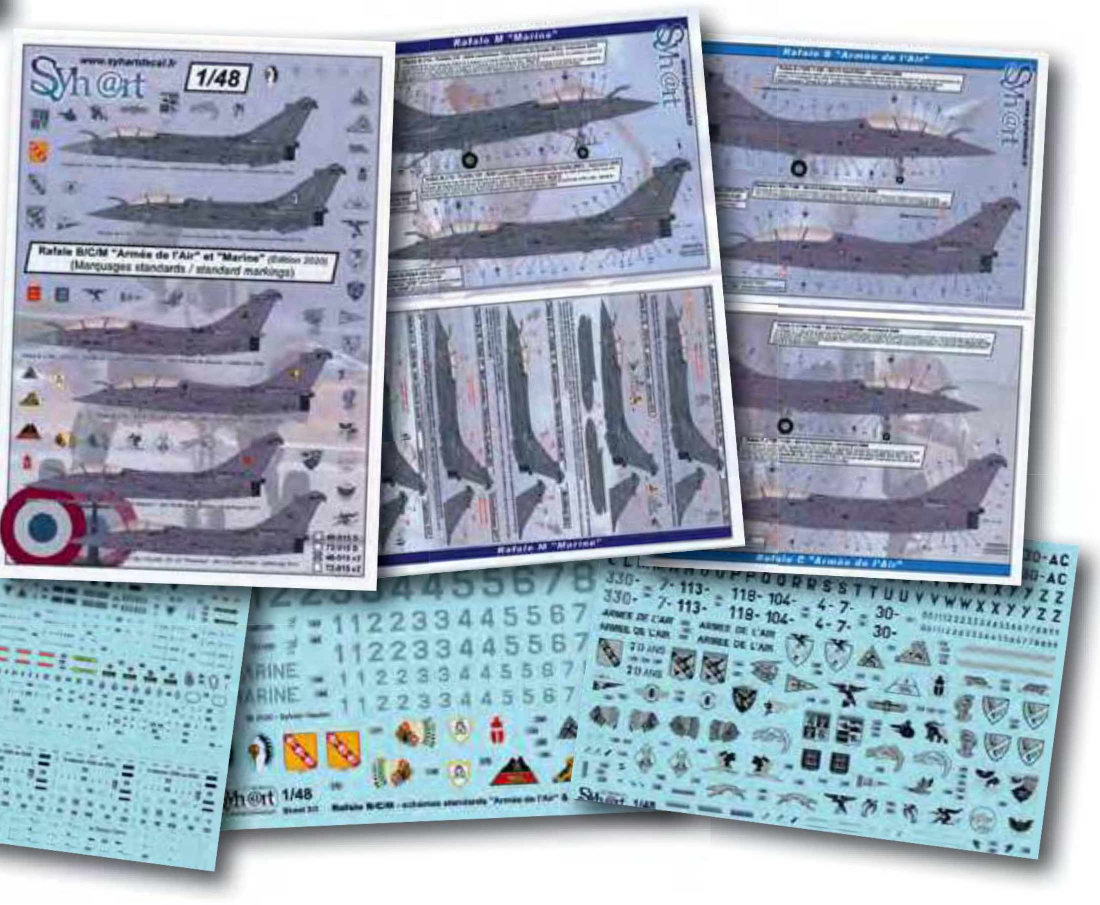
This is another scheme for the brave modeller, with care and attention will turn the standard Rafale into a stunning model. The two French air arms come up with some excellent special schemes and we look forward to seeing them in the flesh again, hopefully at Fairford next year.



RAFALE B/C/M "ARMÉE DE L'AIR" ET "MARINE" – STANDARD MARKINGS (SHEET NO. 48-915 V2 AND 72-915 V2 2020 EDITION)

While the above special schemes attract some modellers, many will be looking for a more-or-less standard squadron finish. Standard options in kits are inevitably limited to one or two units and you may have got your hands on a kit that is in special markings only such as the 1:48 Rafale C from Revell. Using this set you can ditch the special markings and produce a standard Rafale C.

This a great set of decals for any French Rafale be it Air Force or Navy, single or two-seat jet. One large sheet consists of unit badges and sets of alphabet and figures, all printed in low-viz Grey. The second large sheet provides national markings and comprehensive sets of stencilling including those applied to fuel tanks and pylons. A half size sheet provides more sets of numbers and some squadron badges in colour. A fourth small sheet provides sets of MARINE and ARMEE DE L'AIR in Black and Grey and a corrected unit badge. Finally, the same masking sheet for the cockpit side walkways. The 12 page A5 instructions book explains everything that you need to know about decal placement on the various Rafale types.


1/48
Rafale B/C/M "Armée de l'Air" et "Marine" (Edition 2020)
Rafale M "Marine"
Rafale B "Armée de l'Air"
Rafale C "Armée de l'Air"

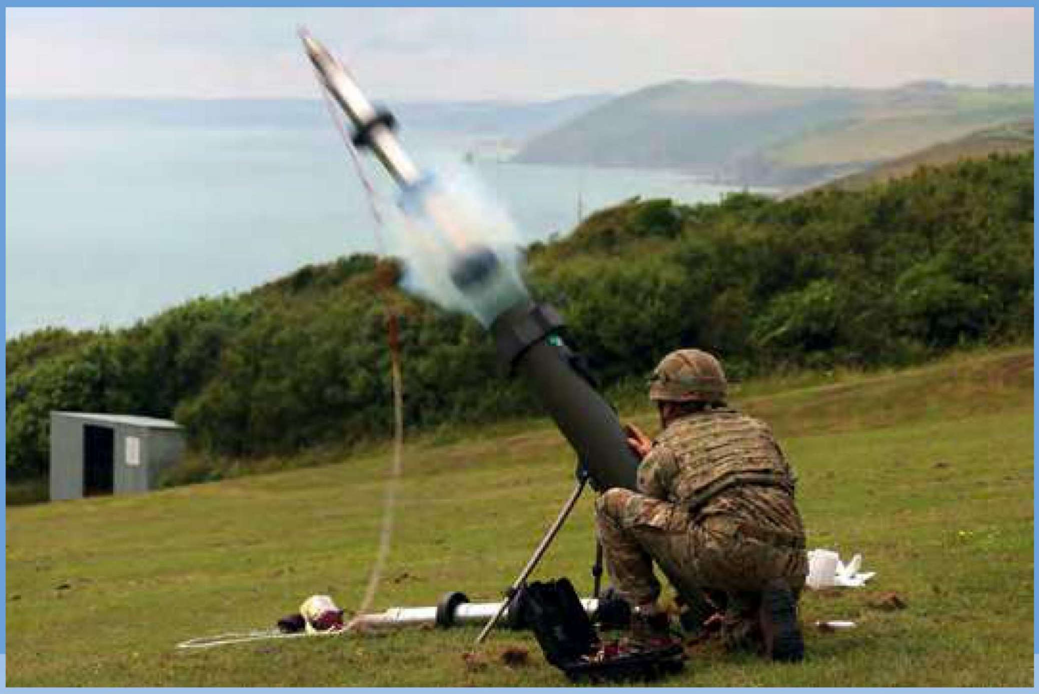
RAFALE B/C/M "STANDARD STENCILS" (SHEET NO. 48-915 S AND 72-915 S)

This set consists of two parts of the standard markings set above. The large decal sheet is covered with stencilling and the second sheet is the masking sheet for the cockpit side walkways. The set comes with an 8pp A5 instructions booklet giving Rafale colour information and plans showing decal placement.

If you would like to get your hands on any of the above sheets see the Syh@rt web site on syhartdecal.fr or look on Hannants web site for prices, ordering and availability. If like me, you have had a couple of Rafale kits in the stash for quite some time, these sets of decals may help move those kits to the top of your pile.

DRONE SWARMS SUPPORT COMMANDO FORCES TRIALS IN A FIRST FOR THE UK'S ARMED FORCES

Pictured is a Wildcat helicopter of 847 Naval Air Squadron (NAS) working with 47 Commando aboard their LCU during Exercise First Wave.



Ranks from 40 Commando Royal Marines and 29 Commando Royal Artillery training with the UVision Hero-120 Smart Loitering System. Members of the companies training team led the personnel through the operation of the equipment. The Hero-120 is a high precision smart loitering munition system, which provides pinpoint strike against anti-armour, anti-material, and anti-personnel targets. Ideal for anti-tank missions, or other strategic objectives, the Hero-120 carries a 4.5 kg warhead and can endure an extended flight time of 60 minutes. The ranks conducted simulator training at The Royal Citadel and live firing of inert rounds at Tregantle Ranges.

Drones dived, sailed and flew together in a swarm in a first for the UK's armed forces during experimental exercises with the Royal Marines.

An array of autonomous systems operated underwater, on the water, in the sky and over land to help Royal Marines Commandos as they carried out training raids on a number of complex 'adversary' positions – such as missile and radar installations – in Cumbria and Dorset.

The uncrewed systems were used on missions at the Electronic Warfare Tactics facility at RAF Spadeadam on the border with Northumberland and off the south coast in training areas around Lulworth Cove and the Defence BattleLab. ■

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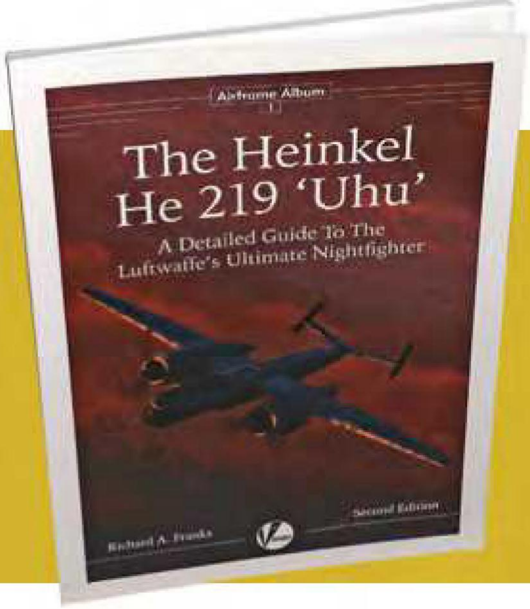
47 Commando (Raiding Group) Royal Marines conducted training in the vicinity of Rame Head (TORPOINT). Ranks conducted winching, hi- lining and helicasting with a Wildcat from Commando Helicopter Force from Offshore Raiding Craft (ORC), Landing Craft Utility (LCU) and Inflatable Raiding Craft (IRC).

VALIANT WINGS PUBLISHING

The Heinkel He 219 ‘Uhu’

A Detailed Guide to the Luftwaffe’s Ultimate Nightfighter - Airframe Album 1 – Second Edition

www.valiant-wings.co.uk



- By Richard A. Franks
- Guide Price £19.95
- ISBN 978-1-912932-18-4
- 144pp softback, 297 x 210mm

This He 219 ‘Uhu” Airframe Album is a revised second edition of their first release in this fine series of books for modellers. The first run of this book was produced back in 2012 and such was the demand that two reprints were needed after the first print run sold out in only two months. Over the last few months, we have seen a series of Valiant Wings’ Second Editions. These are all amended editions rather than straight reprints. As time passes, more information emerges and as an important part of these books, kits and accessories, significant changes take place with the passage of time. To show instantly that this is a new book, Valiant Wings commissioned a superb new artwork for the front cover, a lovely, atmospheric image of the He 219 flying in its night sky environment.

As early as 1940 when the RAF began to make an increasing number of night-time bombing raids the Luftwaffe recognised the need for a dedicated night fighter. Up until this time, current combat aircraft with some modifications would be used to repulse the RAF’s raids. This book’s first chapter (Introduction) tells of the thinking behind the He 219 and its development to a first combat flight in early June 1943. That flight was an amazing success during which the pilot Major Werner Steib flew out of Venlo and claimed five RAF bombers shot down. However, the sortie ended badly when the aircraft was wrecked on landing but the Major escaped with only slight injuries. The Introduction describes the history of the He 219 from concept to the end of the war in Europe, to the fate of captured airframes in the UK and USA. Many were scrapped after the war until only one complete original airframe remains in the USA’s National Air Museum at Dulles Airport. As ever, the text is accompanied by many photos of He 219s that will be useful references for a kit build.

Next, we move on to an almost 70-page Technical Description chapter. This uses both old and new photos and technical drawings of every aspect of the He 219. Each area is described in detail in captions to the illustrations. One interesting fact about the He 219 is that it was the first aircraft to be fitted with an early form of ejection seat to assist the crew to escape the aircraft swiftly and safely should the need arise. All of this is illustrated and described in the first few pages of this chapter with great cockpit reference material. As restoration work on the Smithsonian’s He 219 took place after the first edition of this profile was published we see that pictures taken during the restoration are shown in this Second Edition.

Chapter 2 is the familiar Evolution of the He 219. Diagrams and photos take us through the surprisingly many versions of the 219. Each one shows the often-minor amendment to the previous version with illustrations and copy descriptions showing the changes. Beginning with the first test aircraft in November 1942 to the final never produced proposals in late 1944.

A chapter on Camouflage and Markings shows schemes applied to He 219s throughout their Luftwaffe service and copy describes what is illustrated in the photos and profiles. As usual the profiles are Richard J. Caruana’s excellent work. Virtually all the schemes will be

He 219A-7 Uhu

SAMPLES FOR REVIEW

Please send all items for review to the following address: Model Airplane International, Doolittle Mill, Doolittle Lane, Totternhoe, Bedfordshire, LU6 1QX, United Kingdom. Companies in the European Union should also add our VAT number, which is GB 789 7020 84

challenging, especially when finishing a small-scale model with top surface mottled patterns. This chapter concludes with a page of 1:72 line drawings showing where all the stencilling items belong on the airframe.

The final main chapter catches up on kits produced of the Uhu. Model manufacturers have treated this subject generously with kits in all scales from 1:144 to 1:32. Libor Jekl contributes the first review with a full build of the Dragon He 219A-2 kit that runs to 7 pages of copy and clear build photos. Steve Evans builds the old but excellent Tamiya He 219A-7 Uhu. Despite dating from 1997. Tamiya's kit is still streets ahead of many of the more recent He 219 releases. Five pages describe the building and finishing of this fine kit. Finally, in this Building a Uhu section the more recent, excellent, expensive Zoukei-Mura He 219A0 1:32 kit is given a short mention. Valiant Wings has published a dedicated volume describing building this kit in their Airframe Constructor series, it is still available from their web site.

The final 5 pages are the usual lists of kits, a surprising long one, detailing parts, decals and further reading.

This is another great book from the Valiant Wings team. Another book produced by modellers for modellers. If you are planning a build of this unique German aircraft or just interested in the subject, we recommend that you take a look for yourself.

Thanks again to Valiant Wings for supplying their latest title for review. See the Valiant Wings web site: valiant-wings.co.uk for ordering and availability or visit your favourite specialist book traders such as Avid Reader/Bookworld Wholesale (bookworldws.co.uk). Hannants also stock Valiant Wings titles where you can buy one of the kits and the book.

WINGLEADER PHOTO ARCHIVE NUMBER 10
NEIL ROBINSON
BRISTOL BEAUFIGHTER
Mk I, Mk II AND Mk VIf IN EUROPE AND NORTH AFRICA

RED KITE / WING LEADER PUBLICATIONS

Bristol Beaufighter Mk I, Mk II and Mk VIF in Europe and North Africa (Part 1)

wingleader.co.uk

BEAUFIGHTER If R2198 PN-B 252 SQUADRON
YELLOW TAILS

- By Neil Robinson
- Published by Red Kite/Wingleader
- Guide Price £19.95
- ISBN: 978-1-908757-20-3
- 80pp softback, 210 x 297mm

This is book number ten in the rapidly expanding Wingleader Photo Archive series of great books of modeller's reference material. These books all cover popular model subjects such as the Bf 109E series, Stirling, Lancaster and a recent one on the de Havilland Vampire which will come in handy when the new Airfix 1:48 kit arrives soon.

As can be seen from the title, this is the first book on the Bristol Beaufighter, subject of several kits in the popular scales. If only we could see a modern kit in 1:32. Each page of this book is covered with a set of excellent Baufighter photos, many of which look as 'fresh as a daisy', there are a few in colour too. Each photo has an informative caption and several of the photos have a superimposed arrow pointing to particular features on the aircraft. That may be an air scoop, an aerial, etc. The landscape format is idea for aircraft subjects enabling the photos to be printed to a good size. As well as the photos, some of the Beaufighters featured are translated into colour artwork with a large side profile illustration and smaller top and bottom illustrations. By the side of the illustrations is a set of notes indicating any particular features for Beaufighter builders to consider. Many of the Beaufighters photos are air to air and taken from all angles. Where the aircraft is parked on the ground, as it is a large aircraft on fairly tall main undercarriage, it is possible to see some of the undersides. Several photos show the aircraft being maintained in a variety of conditions, all great for detailing your model.

Where many will find this book, and others in the same series, most useful is for painting and weathering. Even black and white photos provide a wealth of information in this regard. There are a few photos showing clean and tidy aircraft, the majority look very well used. Night fighter finishes are challenging to reproduce. An overall factory finish satin or matt black never looks quite right especially when compared to the finishes seen here. Black-painted aircraft quicky look warn and stained as can be seen in several photos.

There is a wide variety of schemes and finishes for those looking for inspiration. Towards the back of the book is a short, interesting section showing some Mk VIFs used by the USAAF in the night fighter role in the Mediterranean Theatre with their own schemes. It is interesting to see the variety of stars and bars styles and how they have been, in some cases, very roughly painted over the original RAF roundels.

A particular Beaufighter version that we don't see illustrated very often and as far as we remember not in a mainstream kit are those powered by Rolls Royce Griffon engines. Another for an ambitious conversion modeller is the version with a Boulton Paul four-gun turret mounted just aft of the cockpit. This too was powered by Rolls Royce engines rather than the Bristol Hercules radials. Although tested, the Beaufighter with a gun turret did not proceed beyond the test aircraft.

This is another excellent modeller's reference book on a popular aircraft that was used widely during WWII. As kit-making companies have been fairly kind to the Beaufighter, readers will quite possibly have an example in the 'must build it one day' pile. Maybe this book will encourage some to open the box. We thoroughly recommend this as a build aid or just as a good reference for those Beaufighter enthusiasts. We look forward to Part II that is currently with the author.

Thanks to Wingleader for supplying their number ten in their Photo Archive series for review. See wingleader.co.uk for ordering or specialist book suppliers such as Bookworld Wholesale/Avid Reader who are the UK distributor of Red Kite/Wingleader books.

10
BATTLE of BRITAIN
COMBAT ARCHIVE
4 SEPTEMBER - 6 SEPTEMBER 1940

RED KITE / WINGLEADER PUBLICATIONS

Battle of Britain Combat Archive No. 10 (4 September – 6 September 1940)

wingleader.co.uk

- By Simon W Parry
- Guide Price £25
- ISBN: 978-1-906592-79-0
- 128pp, softback, 297 x 210mm

We introduced this excellent history of the Battle of Britain series to readers back in our October 2019 issue when we reviewed Numbers 6 and 7. More have arrived at a steady pace over the last couple of years and now we are at No. 10. This new book covers just three days of the Battle, September 4th, 5th and 6th 1940 when the Luftwaffe was making an all-out effort to finally cripple the Royal Air Force.

The Battle of Britain Combat Archive begins on the 10th July 1940 with Volume 1 reporting on the days from 10th July to 22nd July. It was planned to complete the Battle of Britain history in 12 similar sized volumes.

As the years have passed, so more information has become available and therefore a more complete account of what took place on each day can now be told. A superb piece of artwork showing action between a Hurricane and an He111 adorns this front cover. Each day begins with a full-page colour artwork and a note of the astonishing numbers of aircraft that took part in the day's activity. On those three days the weather in the south of England and northern France was near perfect for flying. On Wednesday September 4th 677 RAF fighters flew 123 patrols against the Luftwaffe that sent 170 bombers and 580 fighters. The numbers are quite staggering.

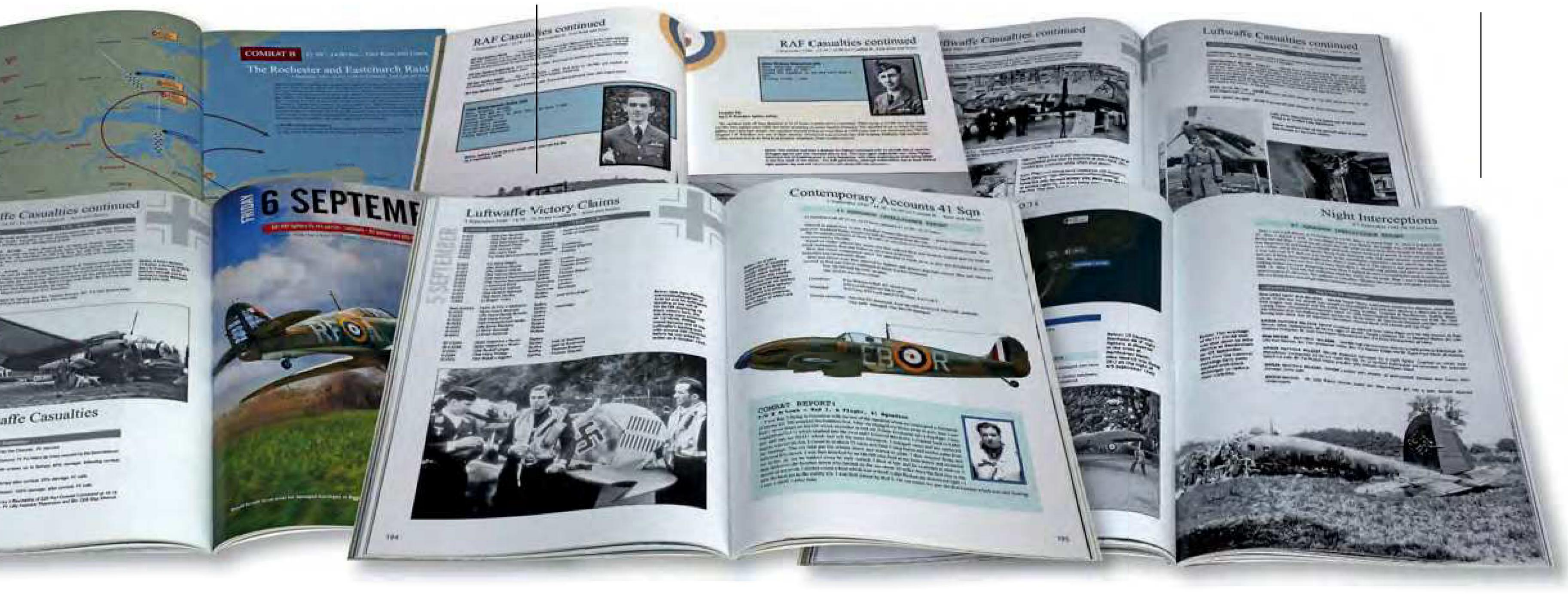
At this stage of the Battle, Germany was making every effort to ground the RAF in preparation for an invasion. Targets being attacked were RAF airfields and important installations such at oil refineries in the Thames estuary and the Vickers aircraft factory at Brooklands. The first attacks commenced at 09.00 hrs with raids by about 50 Dornier 17s supported by around 30 Me109s. In some cases the 109s were escorting the bombers and in others the 109s were there to distract the RAF fighters. This early raid resulted in about a dozen claims on both sides. Following the lists of claims on both sides the author then goes on to provide us with RAF combat reports. These are detailed and come from official post battle intelligence accounts and pilot's combat reports filed shortly after the action. Most include photos of the pilots and brief biographical notes. We then see lists of aircraft lost, with their units, pilots and serial numbers and the fate of the flyers involved. In many cases, unless killed in action, RAF pilots would parachute to safety or force land his damaged aircraft. German pilots would sometimes nurse a crippled aircraft back to France but many would come down on English soil and be taken prisoner. Those coming down in the sea may be rescued by either side.

All of the above is illustrated with photos of the action with many showing crash-landed 109s, colour maps showing formations attacking and defending with symbols showing where aircraft on both sides came down. Lists of RAF and Luftwaffe Victory Claims show some famous names amongst those claiming success. On the German side, we see names such as Adolf Galland, Helmut Wick and Hans Hahn. RAF pilots making claims show in increasing number of Polish pilots listed as well as names such as 'Ginger' Lacey, Bob Doe and George Unwin.

The amount of detail in these books is amazing and a real credit to the team putting the volumes together. The set is becoming a great tribute to those who took part in the Battle of Britain. Sadly, we can no longer enjoy the personal recollections of those who flew in the Battle, these books are the next best thing.

We really look forward to each of the Battle of Britain Combat Archive series as they are published. With several weeks of the Battle still remaining, we will see if Red Kite manage to keep the series to 12 volumes. At this time, we are doubtful. Only time will tell.

This series of books comes with the highest recommendation. Those who have not seen these books so far can order the earlier issues from the wingleader.co.uk web site or from Avid Reader/bookworldws.co.uk who are the UK distributor of the Red Kite range. If you are interested in this short period of WWII, one look at a copy and you could be hooked.

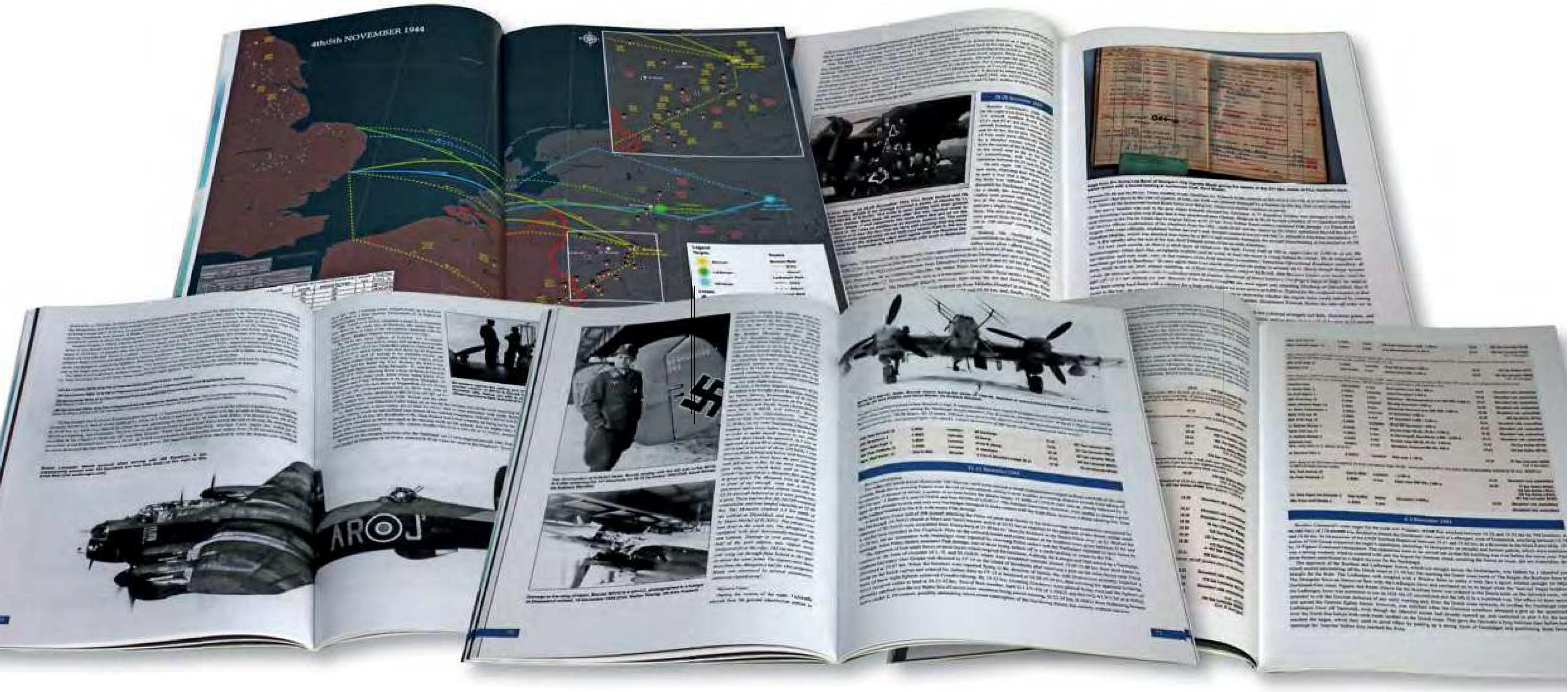


RED KITE / WINGLEADER PUBLICATIONS

Nachtjagd Combat Archive 16 October - 31 December 1944 Part 5

wingleader.co.uk

NACHTJAGD
COMBAT ARCHIVE
16 OCTOBER - 31 DECEMBER
1944
PART 5
THEO BOITEN



- By Theo Boiten
- Guide Price £20
- ISBN: 978-1-906592-78-3
- 96pp, softback, 297 x 210mm

The sub-title on the cover of this book reads “A comprehensive operational history of the German night fighter force on all fronts and an analysis of all claims including Flak units against RAF Bomber Command.” This is the 11th volume in the history of Germany’s night fighter operations. Volume 1 begins in 1939 to the 12th July 1941. It looks like the books are split into varying time spans, no doubt based on the level of activity covered.

Each day between the dates on the cover are covered individually, firstly mentioning the raids despatched from England, the targets and the resulting activity by the German defences. Amazingly detailed tables show the casualties on the allied side. The tables show the name of the German pilot, his unit, the type of aircraft claimed, with the location, time and in most cases the squadron to which the victim belonged. Maps show the routes of the raids, location of the crashes and whether the victim was brought down by a night fighter or flak. Where German aircraft came to grief a small German cross shows the location. It can be seen that some of the allied aircraft made it back over the English coast before coming down on home soil. Photos of the aircraft from both sides appear regularly throughout the copy and many German and RAF crew are shown and named.

As well as the facts and figures, the text shows which German units were sent to attack the bombers with many first-hand combat reports from German pilots taking part. We can see that the German air defences were very well organised by this stage of the war with radar capable of warning of the incoming raiders. When raids were approaching, German controllers would launch the night fighters to meet the bombers.

The period covered by this book is the time when German forces are being driven back into German territory and the allies were applying constant pressure on German war supplies. As well as attacking allied air raids, German night fighters were also tasked against the advancing allied ground forces. During the period covered by this volume, Germany had launched its disastrous counter offensive in the Ardennes, the Battle of the Bulge. The amount of fuel needed for this attack would also have a knock-on effect on Luftwaffe fuel supplies. At the same time Germany’s fuel refining facilities were being hit both during the day and at night by American and British bombers. Experienced pilot numbers were also diminishing. It was a very difficult time for the Luftwaffe and as we will see things were only to get more problematic.

This 11th volume continues in amazing detail, the story of Germany’s air defences. It all makes fascinating reading and comes highly recommended. We are guessing that a further one or two or volumes will take the Luftwaffe Night Fighter story to its conclusion at VE Day.

This series of books comes with the highest recommendation. Those who have not seen these books so far can order the earlier issues from the wingleader.co.uk web site or from Avid Reader/bookworldws.co.uk who are the UK distributor of the Red Kite range.

H.M.H PUBLICATIONS

Sukhoi Su-35s Flanker E

bookworldws.co.uk

Duke Hawkins
Sukhoi Su-35s
Flanker E

- By Duke Hawkins
- Guide Price £23.99
- ISBN: 978-2-931083-10-9
- 114pp softback, 240 x 240mm

Duke Hawkins was looking for something special with which to celebrate his 20th book in his impressive Aircraft in Detail series and who could argue that a book full of superb Flanker photos fits the bill perfectly. The publication of this book celebrates only four years in business. Their aircraft profiles are excellent and ideal companions to a build of a series of modern military aircraft kits.

Duke Hawkins must have friends in the right places in the Russian Air Force to be able to get such access to one of their amazing aircraft. The book begins with some general photos of the Flankers in different schemes. Luckily for modellers, one of the first splinter camouflage schemes did not go into general use. Photographic studies of the forward fuselage areas follow with captions that fully describe the parts seen in the photos. Sensors, panels, aerials, etc. are all pointed out.

The next section moves aft to the air intakes with an opening front on shot that shows the angles of the intakes, landing gear and undercarriage doors. Photos looking straight down the intakes show the very square profile of the intake tunnels. We move on to the fuselage that is very sleek and aerodynamic with a handful of aerials, sensors and cooling intakes. All areas are shown in both close-up and longer shots. When we move on to the wings, there are some great close-ups showing weathering and in-flight shots of both upper and lower surfaces. The Flankers in the photos are remarkably clean with few of the usual fuel, lubricant and stains from ground running. The next eight pages look at the cockpit interior and surroundings. To anyone building a Su-35s these photos will be golden reference material.

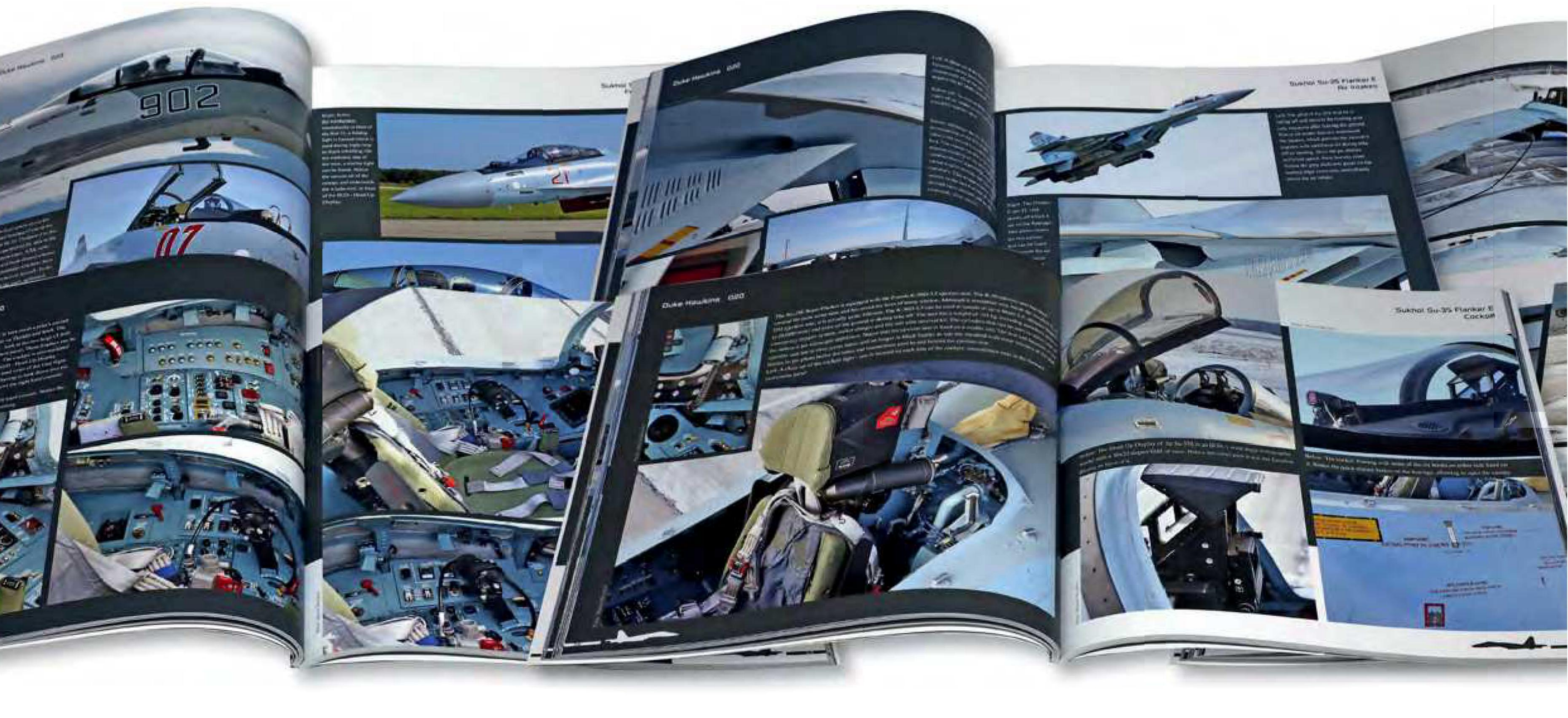
One feature of the Flanker family is the simplicity of the undercarriage design. The main gear is a very sturdy ‘stick’ with a wheel on the end. The nose gear is not quite so straight forward but Duke Hawkins has captured the mechanism in fine detail from all angles along with the insides of the wheel wells.

We then move aft again to the hot end of the large fighter. The front half of the tail planes are unpainted natural metal and come in many shades and levels of polish. An important feature of the Su-35s is the thrust vectoring jet pipes. Again, much of this area is unpainted with heat-stained bare metal. We see many photos of the jet pipes from all angles and looking down the tubes. This book rounds off with photos and notes on the operation of the brake chutes, the weapons pylons and several pages of Flankers in flight and on the ground.

We notice that for once Duke Hawkins has not been invited into servicing hangars and allowed to take photos of the plane’s innards, engines, etc. This comes as no surprise and in no way detracts from the book. Anyone with a Flanker E to build will find just about all you could possibly need by way of reference to help with the project. Duke Hawkins’ Aircraft in Detail series began in spectacular fashion with Jaguar and F-16 books and that high standard continues from profile to profile.

The Duke Hawkins books are available from Bookworld Wholesale (Avid Reader), Hannants and other specialist aviation and modelling book outlets. At the time of writing the longed-for model shows are just beginning to role in England. It will be great to see all the traders in person again and meet old friends again.

Alan Firbank
September 2021



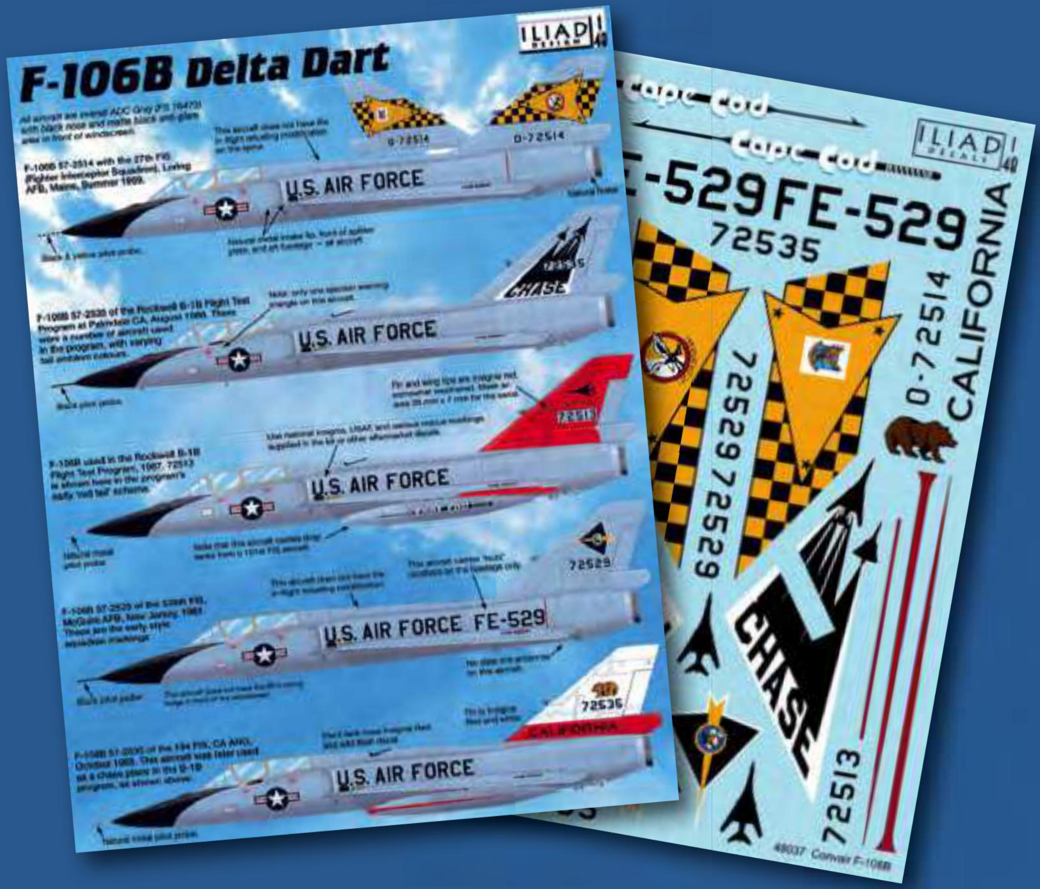
TRANSFER LIST

Written by Alan Firbank.

ILIAD DESIGNS DECALS

iliad-design.com

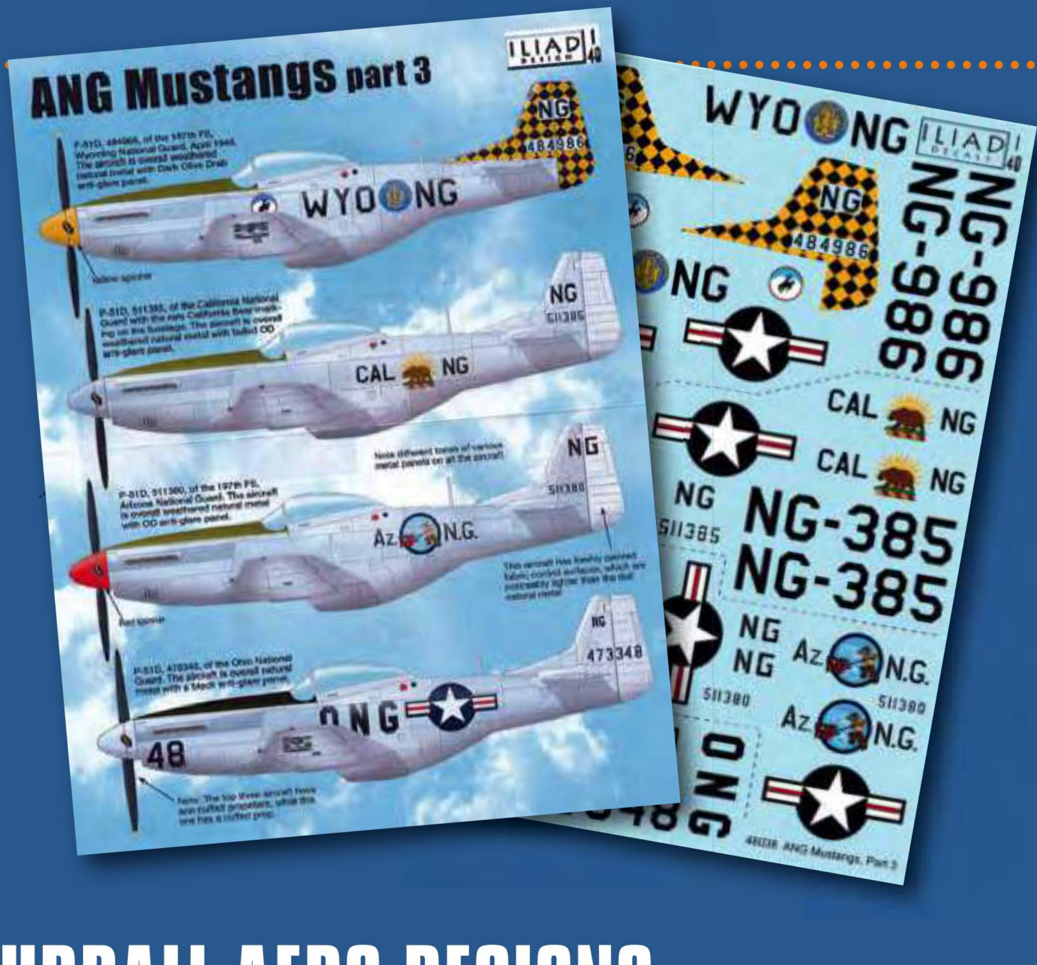
This month we have two great new decal sheets from Canadian decal producer, Iliad Design, both for builders of 1:48 models. The first one will be filling a large gap for anyone looking for decals for the two seat F-106B Delta Dart. The second sheet continues Iliad's decal sets for US ANG Mustangs with some of those hard to find markings for post war P-51s.


F-106B Delta Dart
ILIAD DECALS 48
U.S. AIR FORCE
U.S. AIR FORCE FE-529
FE-529
72535
0-72514
CALIFORNIA
CHASE
72513
Cape Cod
48037 Convair F-106B

F-106B DELTA DART (SHEET NO. 48037)

This set contains a correction sheet, so take note that the checker pattern tail markings for the 27th FIS F-106B on the A5 sheet should not be used. All five of the jets on this sheet are finished in overall Air Defence Gray FS 16473.

01. F-106B 57-2514 with the 27th FIS (Fighter Interceptor Squadron) at Loring AFB, Maine in the Summer of 1969. The unit's Black and Yellow checker pattern appears on the tail fin.
02. F-106B 57-2535 with the Rockwell B-1B Test Flight Program at Palmdale in California in August 1988. This aircraft was used as a chase plane during B-1B test flights.
03. F-106B 72513 again with the B-1B flight test program. In this case the tail fin was painted Insignia Red with a black B-1 silhouette.
04. F-106B 57-2529 with the 539th FIS at McGuire AFB, New Jersey in 1961.
05. F-106B 57-2535 with the 194th FIS with the California Air National Guard with the state's bear badge on the white tail fin. This F-106B was later transferred to be used as one of the B-1B chase planes above.


ANG Mustangs part 3
ILIAD DECALS 48
WYOMING
NG
484986
NG-986
CAL NG
NG-385
511385
Az. N.G.
511380
473348
48
48038 ANG Mustangs, Part 3

AIR NATIONAL GUARD MUSTANGS PART 3 (SHEET NO. 48038)

01. F-51D 484986 with the Wyoming National Guard in April 1948. This Mustang was in overall natural metal with an Olive Drab anti-glare panel on the upper nose and a black and yellow checker pattern on the tail surfaces.
02. P-51D 511385 with the California Air National Guard. The finish was mainly natural metal with the California bear badge on the fuselage and an Olive Drab upper nose panel.
03. P-51D 511380 with the 197th FS with the Arizona Air National Guard. An overall natural metal finish applied to this Mustang too with a panel of Olive Drab on the upper nose.
04. P-51D 473348 '48' with the Ohio Air National Guard. This Mustang was in overall natural metal with the Olive Drab panel on the upper nose and a large '48' on the lower nose.

Thanks once again to Iliad Design for sending their recent releases for review. See their web site: iliad-design.com for ordering direct or see Hannants web site for prices and availability in the UK.

FURBALL AERO DESIGNS

www.furballaero-design.com

FMS-025
FURBALL AERO-DESIGN
F-4B
DESIGNED FOR THE TAMIYA KIT
CANOPY, WHEEL HUB, AND WALKWAY VINYL MASK SET
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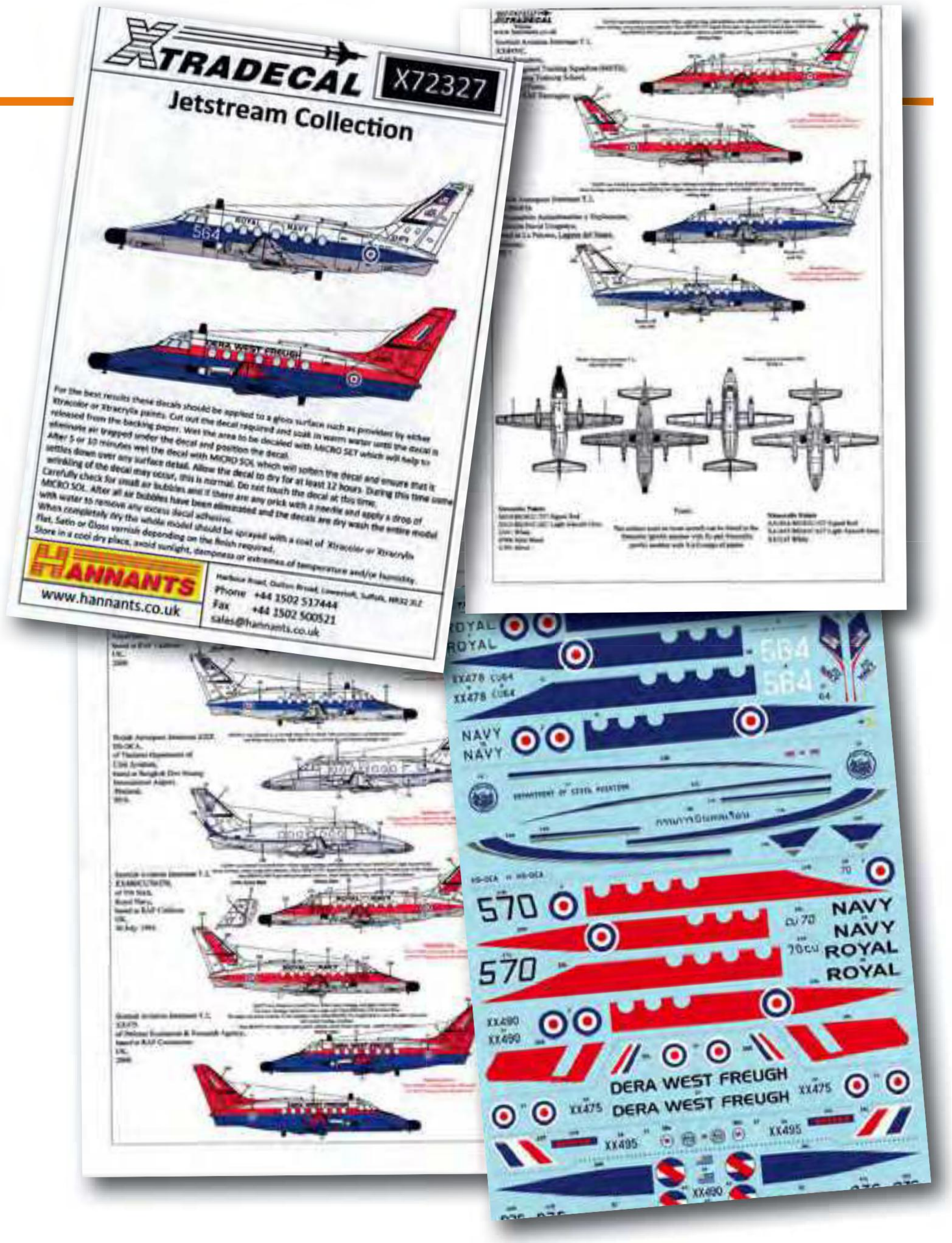
1:48 F-4B CANOPY, WHEEL HUB AND WALKWAY VINYL MASKING SET. SHEET NO. FMS-025

A nice set of masks produced to fit Tamiya's new F-4B. The items listed in the title above are produced on self-adhesive vinyl that is 'kiss' cut, so no need for any scalpel work.
The above Furball items are available from Hannants: web site hannants.co.uk. As well as the USMC decals reviewed, Furball has released a similar sheet of colourful US Navy Phantom markings.

XTRADECAL

www.hannants.co.uk

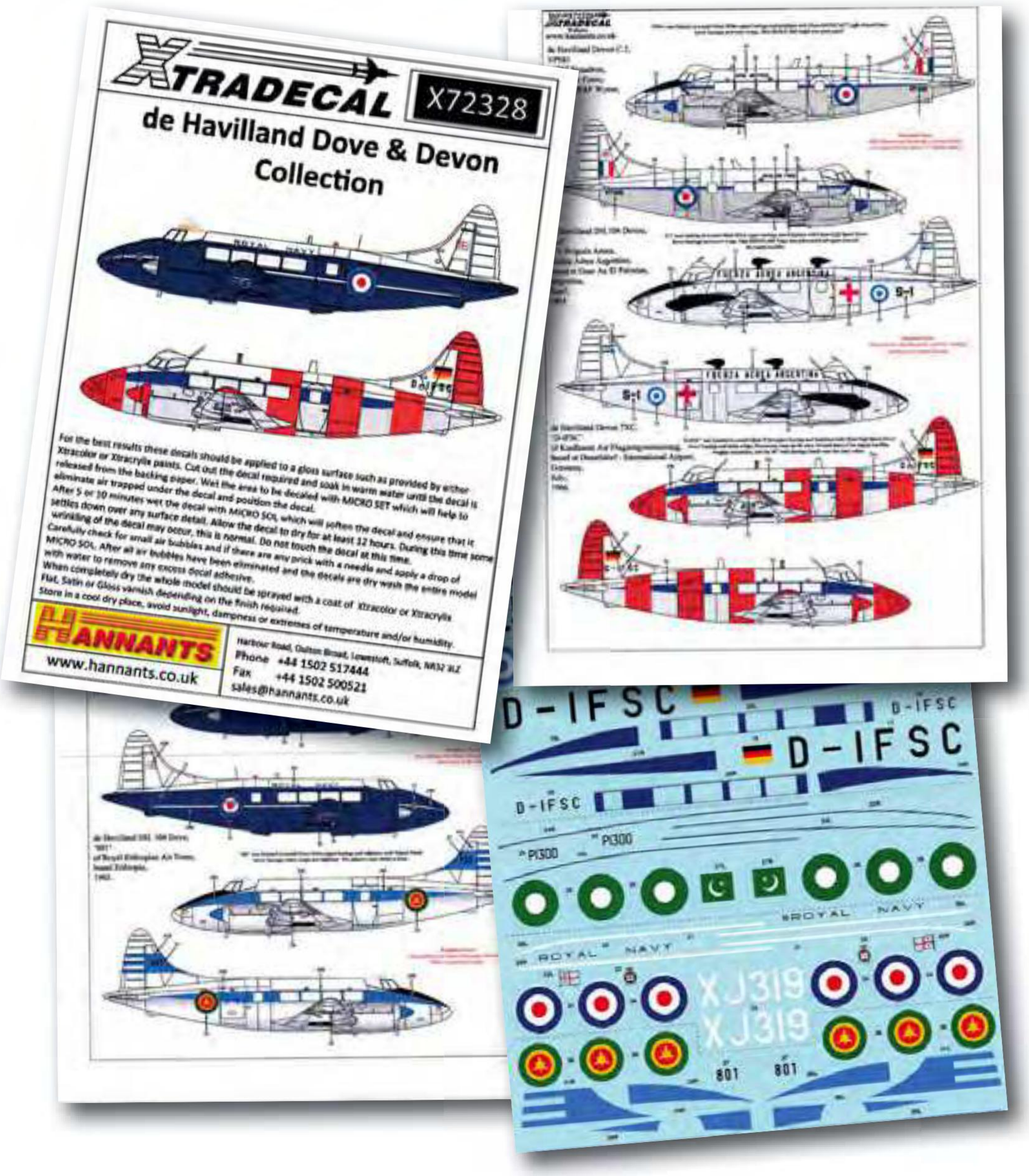
After a long lock-down lull, Xtradecal seem to be getting back up to speed again. Over the last few months Xtradecal has released reprints of some old favourites but not so many new subjects. We are therefore delighted to receive a batch of new releases for review. Those with 1:72 C-130s and 1:48 Chipmunks will be particularly pleased to see some of these new sheets. No less than 37 Chipmunk schemes to choose from. Readers who joined the air cadets or flew at university may find a 'Chippy' in which you had a flight.



JETSTREAM COLLECTION (SHEET NO. X72327)

Airfix re-released their ancient 1:72 Jetstream kit not long ago in their Vintage Classics series but A-Model have some interesting Jetstream versions of this lovely twin turbo-prop aircraft that will suit this decal sheet down to the ground.

01 Jetstream T.2, XX478, CU64/564 with the Royal Navy's 750 NAS at RAF Culdrose in 2009. The top of the cabin is painted Gloss White and the underside Light Aircraft Grey. Helpfully, the wide Blue band along the fuselage is supplied as a decal.
02 Jetstream 32EP, HS-DCA with the Thailand Department of Civil Aviation at Bangkok Don Muang International Airport in 2016. This Jetstream is finished mainly in overall Gloss Silver with coloured trim supplied as decals.
03 Jetstream T.2, XX490 CU70/570 with 750 Naval Air Squadron at Culdrose in July 1985. The upper cabin is painted Gloss White with Light Aircraft Grey undersides with Signal Red outer wings and tail planes. The Signal Red areas on the sides of the cabin and the tail fin are supplied as decals.
04 Jetstream T.2, XX475 with the Defence Evaluation & Research Agency at RAF Cottesmore in 2000. This, the most colourful of the options on the sheet has a Gloss White cabin top and most of the upper wings, a Signal Red band along the fuselage, tail fin, outer upper wings and tail planes. The rest of the airframe is painted Gloss Roundel Blue.
05 Jetstream T.1, XX495, 'C' with the RAF's No. 45 Squadron, Multi-Engined Training Squadron, No. 6 Flying Training School at RAF Finningley in 1994. This T.1 has a Gloss White cabin top, Light Aircraft Grey undersides and inner wing surfaces and Signal Red outer wings and a band along the fuselage sides. It looks like the Signal Red fuselage band from XX490 can be for this scheme also.
06 Jetstream T.2, XX490, '876' now with the Uruguay Navy in 2017. The top of the fuselage is painted Gloss White and the undersides Light Aircraft Grey with a wide band of Roundel Blue along the fuselage sides.

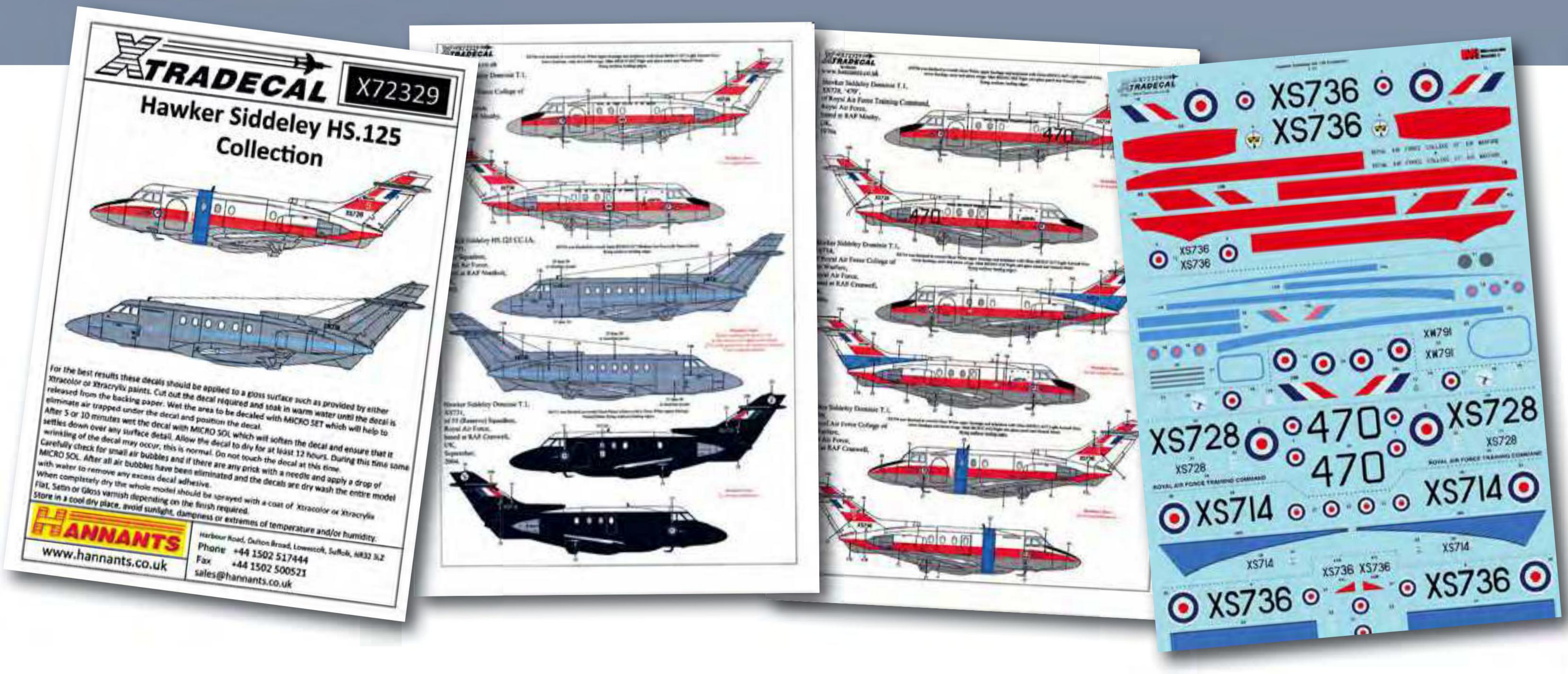


DE HAVILLAND DOVE & DEVON COLLECTION (SHEET NO. X72328)

Here we have a great set of six sets of decals for the de Havilland Devon and Dove from a variety of nations and some lovely colour schemes.

01 Devon C.2, VP981 with No. 207 Squadron at RAF Wyton in 1980. The upper half of the fuselage is painted Gloss White, all other surfaces are in Light Aircraft Grey. A Blue cheat line that runs between the White and Grey is supplied on the decal sheet.
02 Devon, 'S-1' with the Fuerza Aerea Argentina in air force and Red Cross markings at Guar Ae El Palomar, Argentina in 1963. Again, the upper fuselage is painted White with most of the rest of the aircraft in High Speed Silver.
03 Devon 7XC, 'D-IFSC' with the Kaufmann Air Flugzeugvermietung At Dusseldorf Airport in 1966. The basic scheme was again Gloss White upper fuselage and High Speed Silver lower fuselage and wings. About half the fuselage and the rudder is painted in bands of Flourescent Red.
04 Dove, P1300 with the Pakistani Air Force at Karachi Airport in 1958. The upper fuselage is again painted Gloss White with the rest of the aircraft in Light Aircraft Grey.
05 Sea Devon C.20, XJ319 at RNAS Yeovilton in 1970. This Royal Navy Sea Devon is in overall Gloss Oxford Blue with the exception of the Gloss White upper fuselage and tail fin.
06 Dove, '801' with the Royal Ethiopian Air Force in 1963. This 104 Dove has the usual Gloss White upper fuselage and tail fin with the rest of the airframe in Natural Metal. The Medium Blue trim on the tail fin and wide band along the fuselage is supplied on the decal sheet.

TRANSFER LIST


XTRADECAL
X72329
Hawker Siddeley HS.125 Collection
HANNANTS
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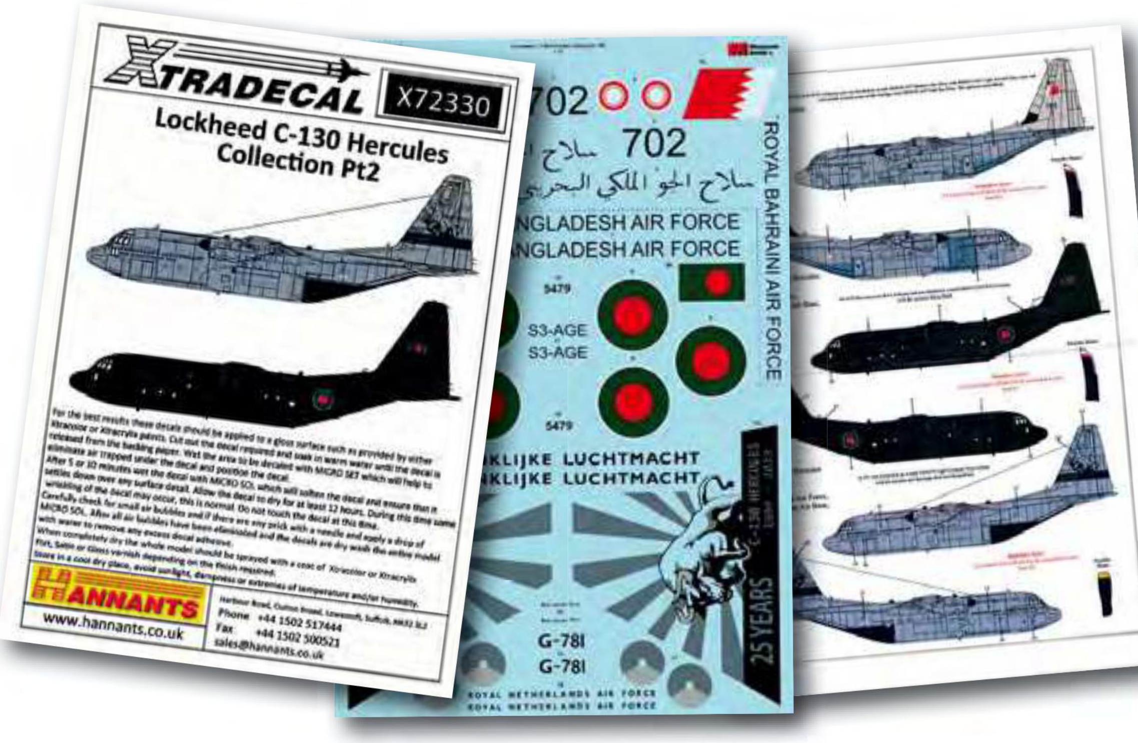
XS736
XW791
XS728
470
XS714

HAWKER SIDDELEY HS.125 COLLECTION (SHEET NO. X72329)

Here we have another set of six decals that will be ideal for the recent release of the Airfix HS.125 Dominie Vintage Classics kit.

01 Dominie T.1, XS736 with the RAF College of Air Warfare at RAF Manby in August 1973. The upper fuselage is painted Gloss White and the rest of the jet is painted Light Aircraft Grey. A Red band and tail fin trim is supplied on the decal sheet.
02 HS.125 CC.1A, XW791 with No. 32 Squadron at RAF Northolt in 1992. The paintwork is overall Medium Sea Grey with decals supplied for the pale Blue cheatline.
03 Dominie T.1, XS731 with No. 55 (Reserve) Squadron at RAF Cranwell in September 2004. An overall Gloss Black with White to the top of the cabin, top of the wings and tail planes scheme applies to this T.1.
04 Dominie T.1, XS728, '470' with the RAF Training Command at RAF Manby in the 1970s. The upper half of the fuselage is painted Gloss White and the rest of the aircraft, Light Aircraft Grey. The same Red decals for the band along the fuselage and tail markings as supplied for No. 1 above are used for this one too.
05 Dominie T.1, XS714 with the Royal Air Force College of Air Warfare at RAF Cranwell in the 1980s. The scheme is as XS728 above but with the addition of a Blue area at the base of the tail fin.
06 Dominie T.1, XS736, 'S' with the RAF College of Air Warfare at RAF Cranwell in 2000. At this later date, XS736 is in almost the same colours as in 1973 but with the addition of Cranwell's Blue band around the forward fuselage as applied to some of Cranwell's aircraft.


XTRADECAL
X72330
Lockheed C-130 Hercules Collection Pt2
HANNANTS
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702
ROYAL BAHRAINI AIR FORCE
BANGLADESH AIR FORCE
5479
S3-AGE
KONINKLIJKE LUCHTMACHT
G-781
25 YEARS
ROYAL NETHERLANDS AIR FORCE

LOCKHEED C-130 HERCULES COLLECTION PT.2 (SHEET NO. X72330)

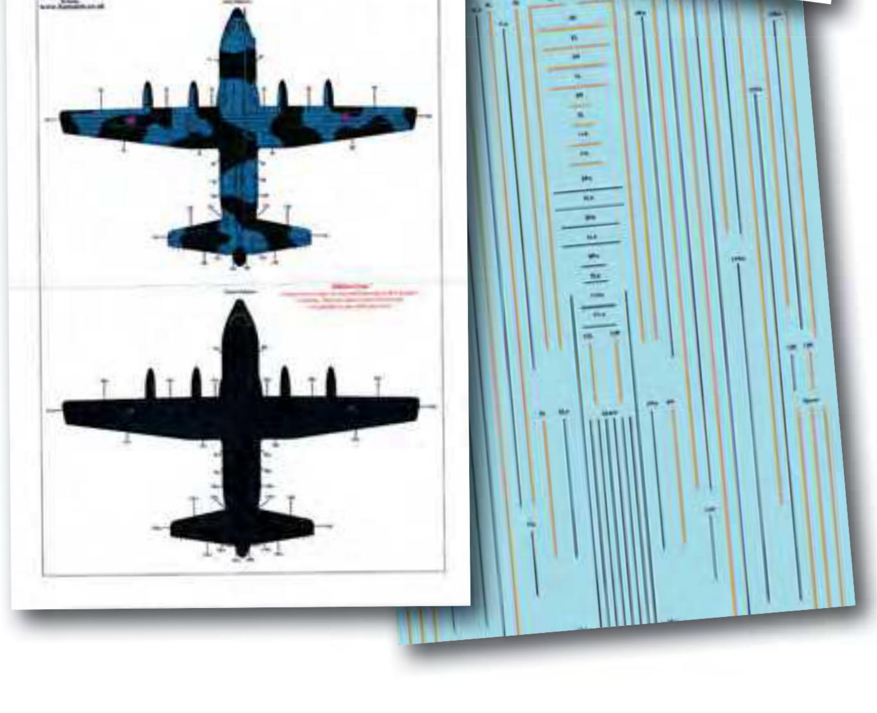
Three interesting sets of markings for air forces not often depicted on aftermarket decal sheets.

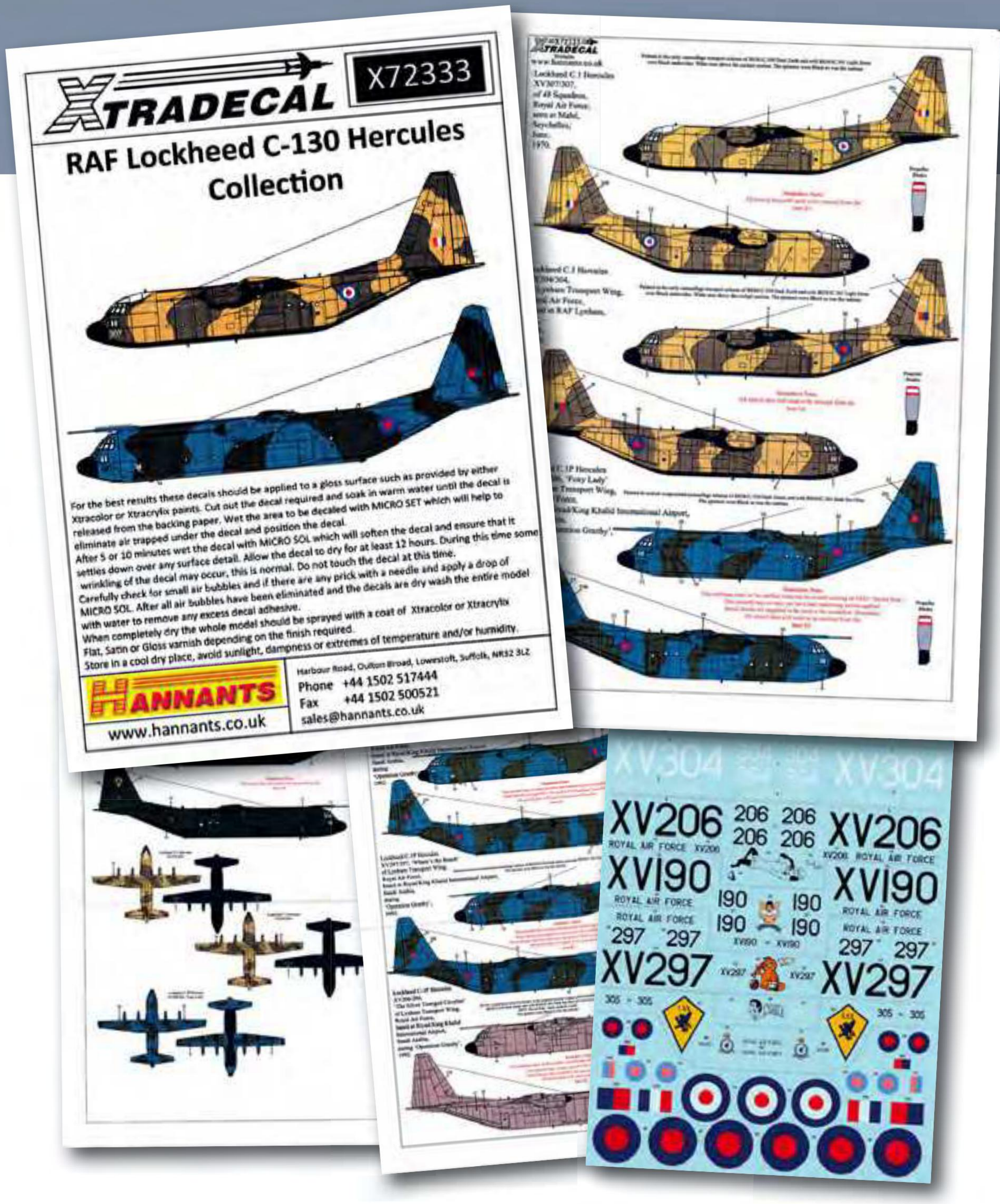
01 C-5 (C-130J) Hercules, 702 with the Admin Flight of the Royal Bahrain Air Force at Sakhir Air Base in 2018. This ex-RAF Hercules is in an odd mix of large areas of Grey paint. The tail fin and nose are painted Light Aircraft Grey, most of the rest of the aircraft painted Medium Sea Grey with some panels around the cargo door and on the right side of the fuselage, ahead of the wing in Dark Sea Grey.
02 C-5 (C-130J) Hercules, 99-5479 with the Bangladesh Air Force at Bangabandhu Air Base in August 2019. This C-130 is also an ex-RAF aircraft and the finish is overall NATO Green.
03 C-130H Hercules, G-781 with No. 336 Squadron, Royal Netherlands Air Force at Eindhoven Air Base in October 2019. A charging bull painted on both sides of the tail fin celebrates 25 years of Hercules service with the Dutch Air Force. This C-130 is painted overall Light Compass Gray FS36375 with the area around the rear cargo door painted Black.

RAF LOCKHEED C-130 HERCULES WALKWAY STENCILS (SHEET NO. X72332)

This sheet does 'what it says on the tin', a sheet full of fine single lines and yellow/black hatched walkway lines. The instructions show a top view of two C-130s, one in the old scheme and one current scheme. All you will need to boost the look of the top of your C-130 model.

XTRADECAL
X72332
RAF Lockheed C-130 Hercules Walkway Stencils
HANNANTS
www.hannants.co.uk





RAF LOCKHEED C-130 HERCULES COLLECTION (SHEET NO. X72333)

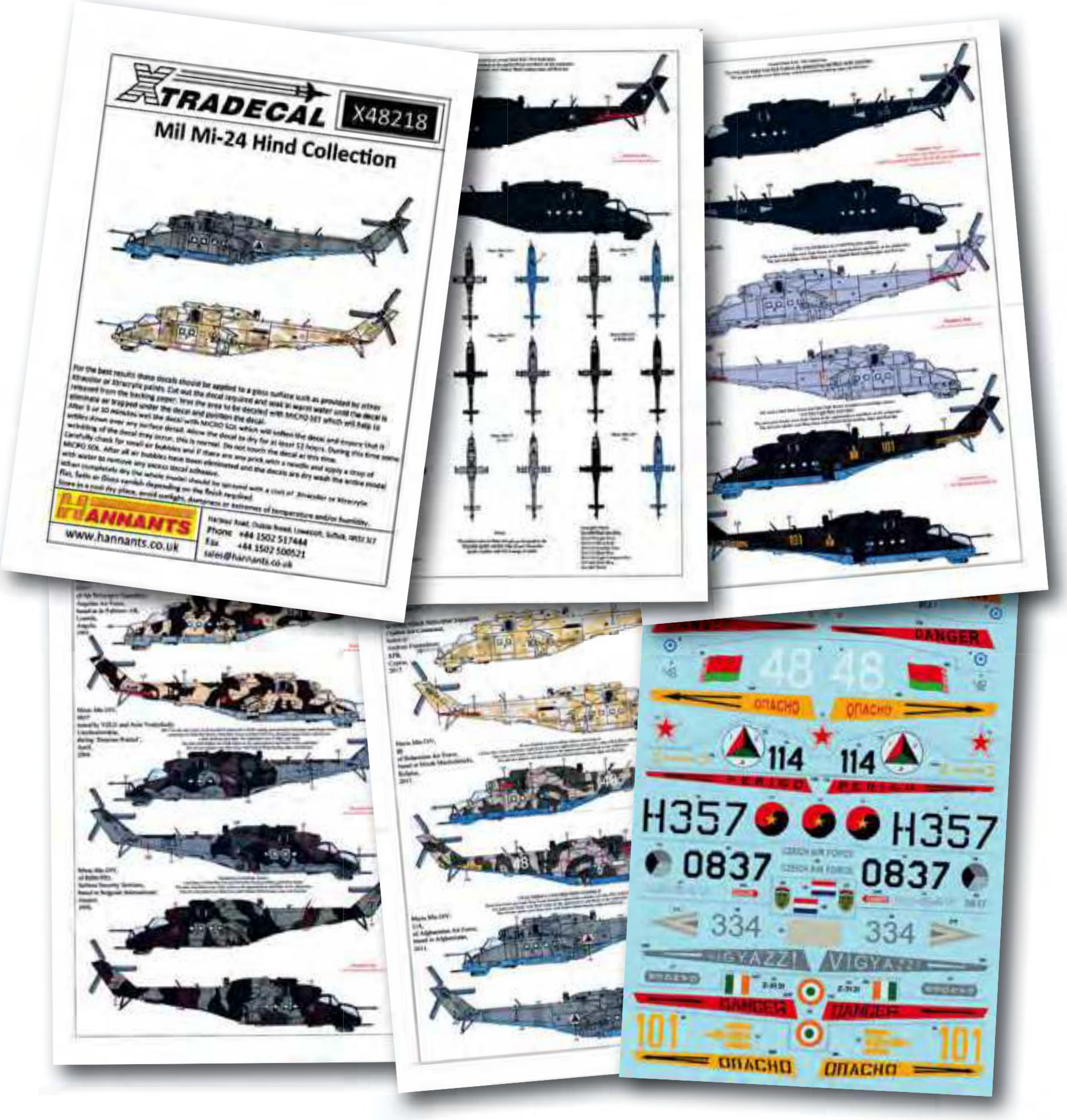
Here we have no less than seven RAF C-130s in a variety of sizes and colour schemes from the days of RAF Lyneham-based operations. As well as the main markings there are sets of the different RAF roundel styles that apply.

01 C.4 Hercules, XV305 '305' with No. 70 Squadron, the Lyneham Transport Wing in August 2010. The scheme is overall NATO Green.
02 C.4P Hercules XV190 '190' 'Betty Boop' with the Lyneham Transport Wing when operating during 'Operation Granby' in Saudi Arabia in 1992. This Hercules is in an overall camouflage pattern of Dark Green and Dark Sea Grey.
03 C.1P Hercules XV297 '297' 'Where's the Beach' with the Lyneham Transport Wing during 'Operation Granby' in Saudi Arabia in 1992. An overall camouflage pattern of Dark Green and Dark Sea Grey applies.
04 C-1P Hercules XV206 '206' 'The Silver Tongued Cavalier' with the Lyneham Transport Wing operating from Riyad during 'Operation Granby' in 1992. The original Dark Green/Dark Sea Grey camouflage pattern was covered with a coat of Desert Pink apart from the bottom of the fuselage.
05 C.1 Hercules XV307 '307' with No. 48 Squadron when seen in the Seychelles in June 1970. This early RAF Hercules was painted in the eye-catching camouflage scheme of a pattern of Dark Earth and Light Stone on the upper surfaces with Black undersides and the White cockpit 'cap'.
06 C.1 Hercules XV304 '304' with the Lyneham Transport Wing at RAF Lyneham in May 1976. The scheme is again Dark Earth/Light Stone/Black.
07 C.1P Hercules XV206 '206' "Foxy Lady' with the Lyneham Transport Wing supporting 'Operation Granby' at Riyad in Saudi Arabia in 1992. The scheme illustrated was an overall pattern of Dark Green and Dark Sea Grey but soon afterwards was overpainted Desert Pink.

MIL MI-24 HIND COLLECTION (SHEET NO. X48218)

1:48 kits of the Hind have been around for a while but the new ones from Zvezda are a good reason for releasing a set of decals at this time with a choice of ten challenging schemes.

01 Mi-35P '813' with the 450th Attack Helicopter Squadron, Cypriot Air Command at Andreas Papandreou AFB in Cyprus, 2008. The scheme is overall Dark Grey RAL 7016 apart from Black undersides.
02 Mi-24V '134' with the Hungarian Air Force at Szolnok Air Base in Hungary in 2018. A similar scheme to the Cypriot Hind above applies to this helicopter.
03 Mi-35 Z-3131 with the 104th Helicopter Squadron of the Indian Air Force at Suratgarh AFS in India in 2010. The scheme is overall Pale Grey.
04 Mi-24V '101' with the Mongolian Air Force in 2004. The scheme is a pattern of Dark Green and Dark Brown on the upper surfaces with Light Blue undersides.
05 Mi-35 H357 with the 4th Helicopter Squadron of the Angolan Air Force in Angola in 1991. There is a pattern of Light Stone and Brown on the upper surfaces with Blue-Grey undersides.
06 Mi-24V '0837' as tested by VZLU and Aero Vodochody in Czechoslovakia during 'Exercise Pohled' in April 2004. A one-off camouflage pattern of Red Brown, Dark Green and Dark Grey was applied over a Medium Grey base with Light Grey undersides.
07 Mi-24V with the Serbian Security Services at Belgrade Airport in 1998. A wraparound camouflage pattern of Red Brown, Dark Green and Light Olive Green was applied.
08 Mi-35P '813' with the 405th Attack Helicopter Squadron, the Cypriot Air Command in 2017. A camouflage pattern of Light Sand, Tan and Dark Sand was applied to this Hind.
09 Mi-24V '48' with the Belarusian Air Force at Minsk in 2017. A camouflage pattern of Olive Green and Light Stone was applied to the upper surfaces with Deep Blue undersides. We have a query with this one regarding the Light Stone that is illustrated in a much darker shade. Is the illustration correct or the description?
10 Mi-24V '114' with the Afghanistan Air Force in 2011. The paintwork is a pattern of Dark Grey-Green and Light Grey-Green on the upper surfaces and Sky Blue undersides.



IN PRINT

SAMPLES FOR REVIEW

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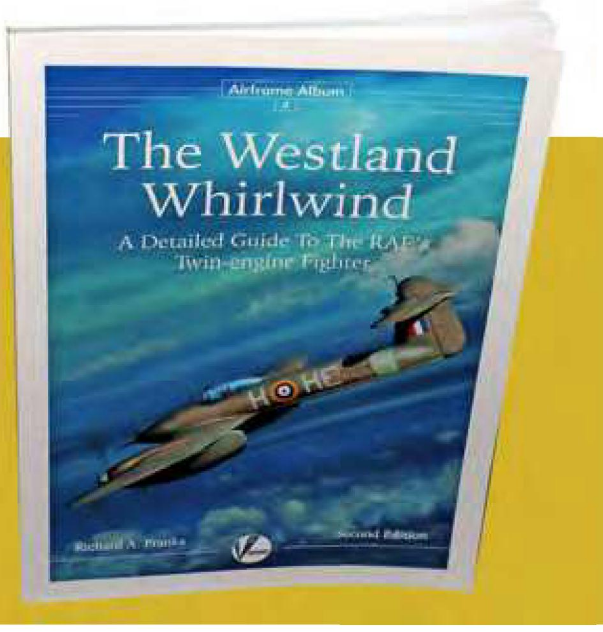


VALIANT WINGS PUBLISHING

The Westland Whirlwind

A Detailed Guide To The RAF's Twin-Engine Fighter - Airframe Album 4 - Second Edition

www.valiant-wings.co.uk

- By Richard A. Franks
- Guide Price £19.95
- ISBN 978-1-912932-22-1
- 96pp softback, 297 x 210mm

This is another of Valiant Wings' second editions that have been published in the last few months. We do not have a copy of the original book, published in 2014 so we are unable to comment on any changes, but one change is obvious: the review of the recent 1:32 Special Hobby kit.

As usual, this book opens with the history of the Westland Whirlwind. The original Air Ministry requirement dated back to 1935 for a single seat, twin engine fighter. At that time, there was not the urgency of war to push the project forward so progress was slow, not helped by the choice of a Rolls Royce Peregrine engine. By the time Whirlwind production should have been moving at speed, Rolls Royce was otherwise occupied with Merlin development and production. The story makes interesting reading, a tale of what could have been, if only. Rather than continue in a fighter role, by mid 1942 Whirlwinds would assume a fighter-bomber role. Only 144 were built and those delivered gradually reduced in numbers until in mid-June 1944 the Whirlwind was declared obsolete and the remaining examples were sent to storage and retired.

For many modellers, the Technical Description section of almost thirty pages will prove to be very useful, full of fine detail of the Whirlwind's construction and systems. Construction diagrams and contemporary photos show all you could wish for. Subsections cover all parts of the aircraft and includes weaponry and radio equipment, etc. Some cockpit photos and diagrams will be particularly useful.

Next, is the Evolution chapter that takes us back to the original proposed design with a twin-tail layout. This chapter is much shorter than in many similar books as the life of the Whirlwind was a short one and concludes with proposed versions that did not make it as far as production. Sadly, the only Whirlwind that remained in one piece after WWII was used by Westland for a year or so and then scrapped in 1947. There have been thoughts of building a replica from plans, fingers crossed that this happens one day.

Despite the limited numbers built, the Camouflage & Markings chapter shows the many different schemes applied to Whirlwinds. Five pages of Richard J Caruana's excellent colour profiles show the schemes following about ten pages of text and contemporary photos. A Production chapter follows with what appears to list all Whirlwinds built and their individual fate. It is rare that there is such a short run of a combat type in RAF WWII service that enables a comprehensive list.

This Whirlwind profile rounds-off with a full build review of the recent Special Hobby 1:32 Whirlwind F Mk I kit by Steve A Evans. Of all the kits we thought we would never see, as a quality injection moulded kit, a 1:32 Whirlwind would be somewhere near the top. The build covers seven pages with notes and construction photos with a glowing conclusion at the end. This book's final pages consist of the usual lists of Whirlwind kits, accessories, further reading and six pages of 1:48 plan drawings.

This is another excellent second edition of an earlier Airframe Album book. This book will be ideal if you have one of the older kits in stock or about to dive into the box of the new Special Hobby kit.

Thanks again to Valiant Wings for supplying their latest title for review. See the Valiant Wings web site: valiant-wings.co.uk for ordering and availability or visit your favourite specialist book traders such as Avid Reader/ Bookworld Wholesale (bookworldws.co.uk). Hannants also stock Valiant Wings titles.

Alan Firbank
September 2021

Camouflage & Markings

SPITFIRE MK.VC AND THE UNIVERSAL C WING

A BRIEF LOOK AT THE HISTORY AND TECHNOLOGY OF THE SPITFIRE MK.VC AND THE UNIVERSAL C WING

Three versions of the Spitfire Mk.V were produced, with several sub-series.

The Vc was the first to use the “universal” C Wing.

The Universal Spitfire C Wing

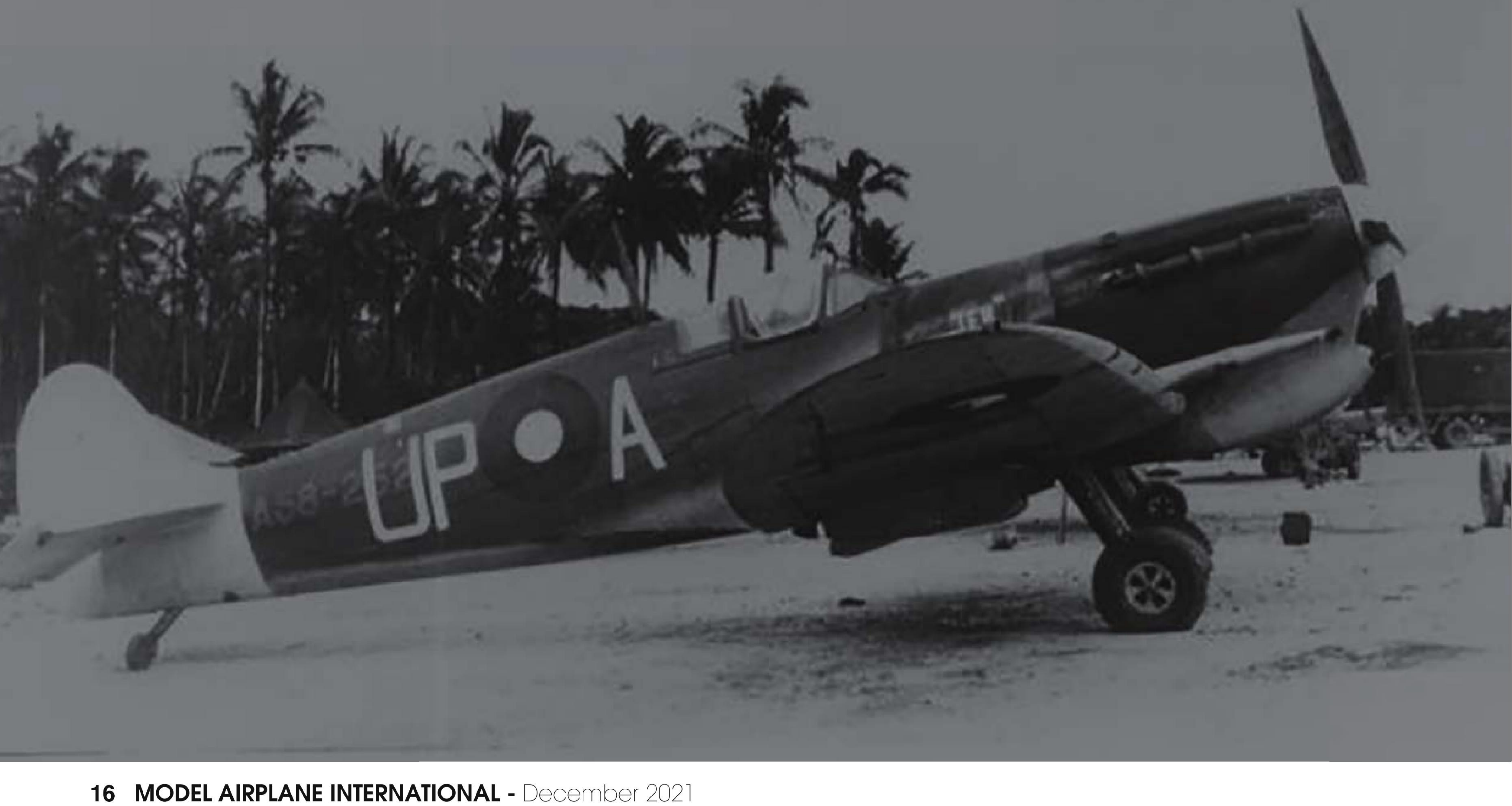
The "C-type" wing, or "Universal wing" was a heavily modified wing, redesigned to reduce labour and manufacturing time, as well as to allow different armament configuration options to be fitted in a single, universal wing structure which could accommodate several different armament layouts without serious structural modification or alteration

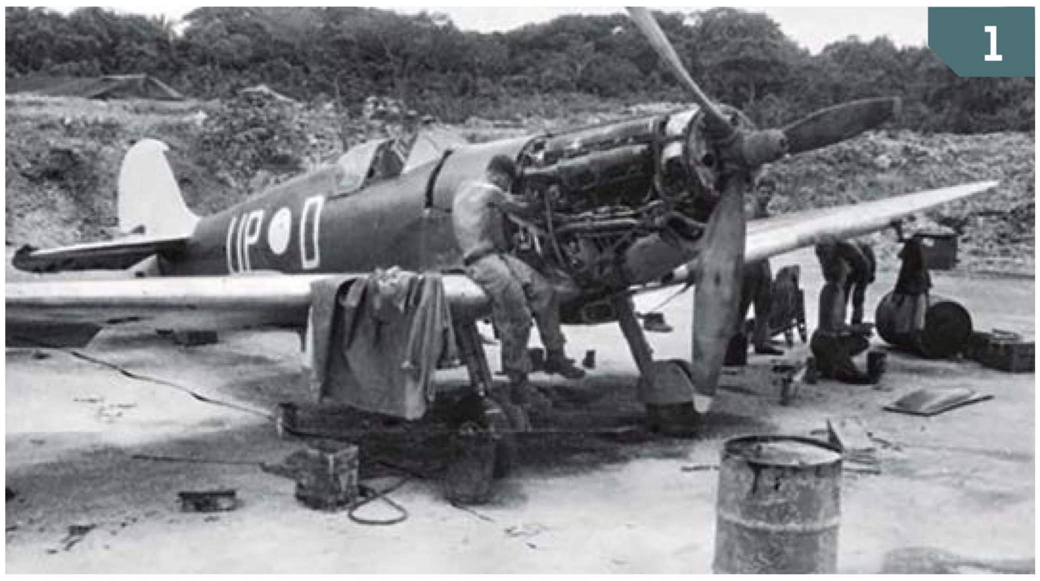
Without modification, the "universal" wing could accept "A", "B", "C" or "E-type" armament configuration, although the "E" type wasn't used until later marks of Spitfire. The "B" type, 2-cannon, 4-Browning layout was by far the most commonly seen on "C" wing Spitfires, until the Mk IX and the "E" wing.

Differences in the "C" wings include a second cannon-bay added directly alongside the first, and the #3 Browning gun being moved slightly outboard from ribs 13 to 14, making the two outer machine guns closer together than in the older "B" type wing. Although officially any aircraft with a universal wing is a "C" variant regardless of their armament configuration (excepting "E" types), in later popular (and incorrect) usage, "C" variants with the same armament as the "B" type are often called "B" variants, even though it's technically a "C", and structurally it is different than the older "B" wing Spitfire.

The new wing now had two inner gun bays able to accommodate cannon, although one bay was usually left empty. The outer two .303 machine guns were also moved closer together than in "A" or "B" type wings,

Spitfire Mk.Vc Trop, UP-A, A58-252, 79 Squadron RAAF, Morotai Island, January 1945. Note the prominent Vokes tropical filter on the lower cowling.





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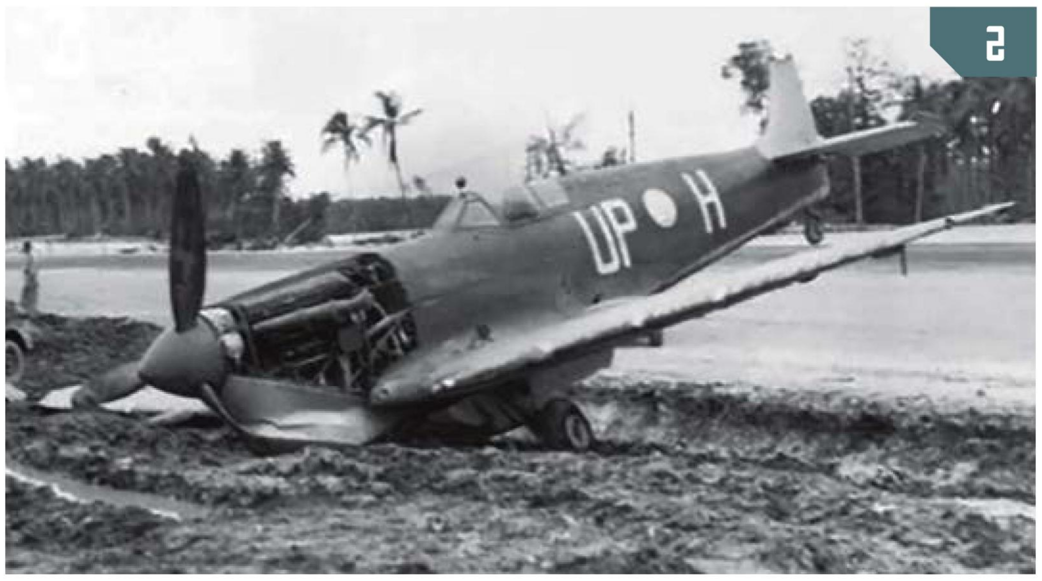

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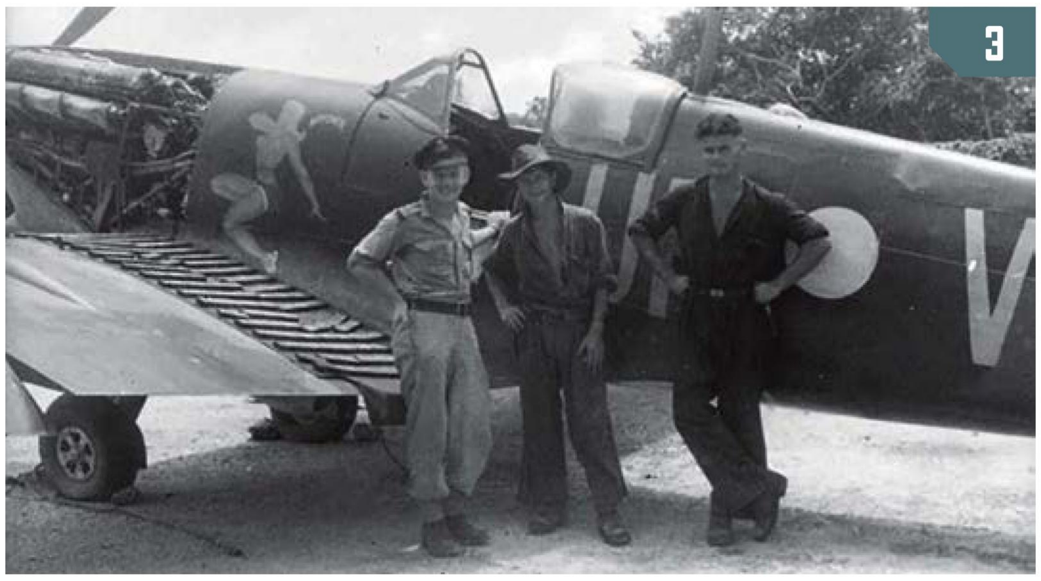

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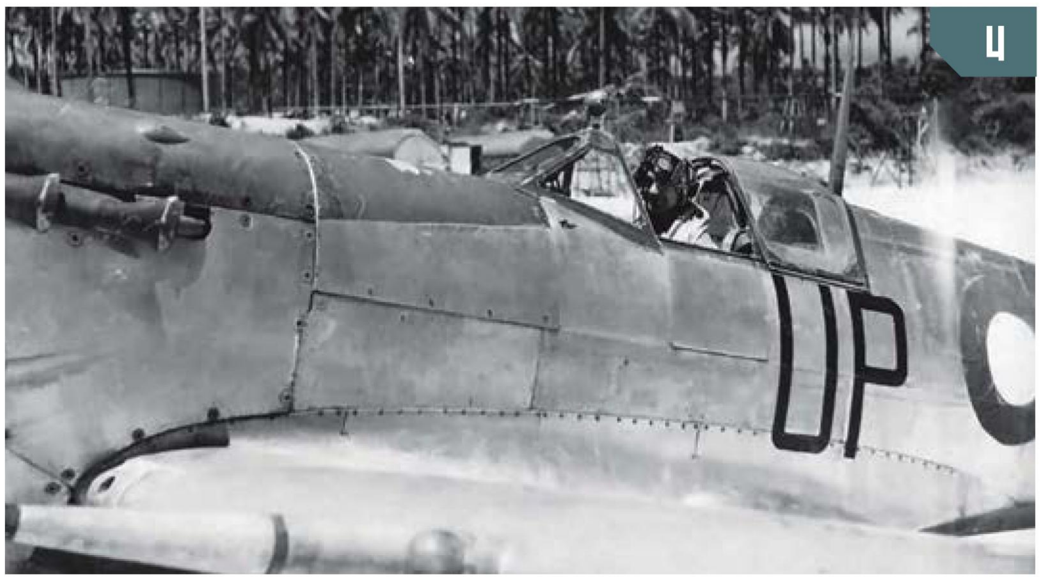

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1: Spitfire Mk.Vc, UP-D, A58-185 of 79 Squadron RAAF undergoing maintenance on Kiriwina Island, New Guinea on 11 September 1945. 2: Spitfire Mk.Vc UP-H, serial A58-158, after a ground loop in New Guinea on 19 April 1944. 3: Pilot and ground crew of Spitfire Mk.Vc, UP-V, A58-145 on Kiriwina Island, New Guinea in September 1943. 4: A relatively rare bare metal Spitfire Mk.Vc, YP-N, serial A58-167 (original RAF serial ES249), photographed on Admiralty Islands in January 1944. 5: Spitfire Mk.Vc UP-P, with noticeably skinny code letters, at the dispersal are on Los Negros in July 1944.

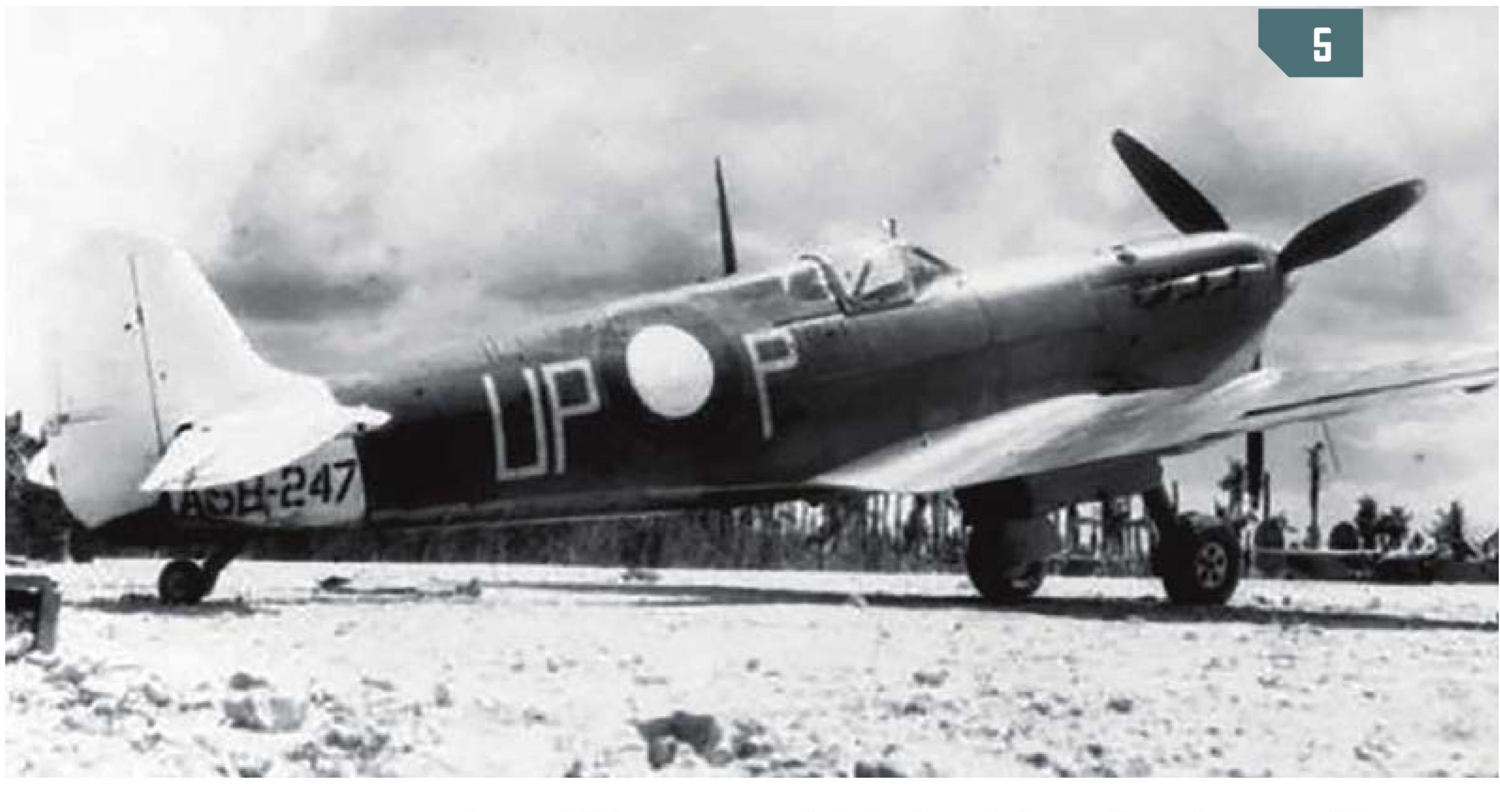
which is one of the primary visual aids to distinguishing an original "B" type from later universal wing "B types", along with the second pair of cannon ports, which are visible even though typically no weapons are fitted in the second cannon bay. In this case, the empty port is usually closed off with a rubber plug. The cannon mounts were also moved further back in the wing, so the barrel fairings of the cannon are shorter than on an original "B" Spitfire.

Few, if any, Spitfires "C" Spitfires were built with the eight .303 Browning "A" armament configuration, which was viewed as obsolete by the time the Mk V went into combat.

The "C" type wing was the first which could accommodate an all-cannon armament of four 20mm Hispanos; thus the "C" designation is popularly reserved for four-cannon Spitfires (i.e. Mk Vc). The "C" type armament was also rarely used (although not as rare as the "A" armament), due to the extra weight of the added cannon eroding performance and handling. Many Spitfires originally fitted with the "C" armament had the extra cannon removed in the field to save weight. In theory, a "Universal" wing Spitfire could carry an armament of four 20mm cannon and four .303 Brownings, but this would be heavily loading the aircraft indeed, and thus was never used. (An "E" type wing, usually seen in Mk IX and later versions, was similar to the "C" armament, but used a pair of American .50 caliber Browning AN/M2 heavy machine guns in place of the inner pair of Hispanos, giving an armament of two Hispanos and two .50cal Brownings.)

The Universal wing also took into account the fact that the Hispano cannon had been converted to belt-feed, a move which allowed each cannon to carry double the ammunition load, or 120 rpg in ammunition trays instead of 60 rpg as in the original drum-fed cannon of the Mk Vb. This also eliminated the need for under- and over-wing blisters to accommodate the large-diameter ammunition drum, instead only requiring a small blister to cover the electrical "Chattellerault" feed mechanism. The undercarriage mountings were redesigned and the undercarriage doors were bowed in cross section allowing the legs to sit lower in the wells, eliminating the upper-wing blisters over the wheel wells and landing gear pivot points. The stronger undercarriage legs were angled 2 inches (5.08 cm) forward when extended, making the Spitfire more stable on the ground and reducing the likelihood of the aircraft tipping onto its nose. In addition the retractable landing lights were no longer fitted. Structural hard-points were added outboard of the wheel-wells, allowing racks to be fitted under each wing which were capable of carrying one 250 lb (113 kg) bomb each.* ■

* Adapted from Wikipedia



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TRANSFER LIST

Written by Alan Firbank.

XTRADECAL

www.hannants.co.uk

AVRO VULCAN COLLECTION PT 1 (SHEET NO. X72331)

The re-tooled 1:72 Airfix Vulcan was a hugely welcome announcement at Scale ModelWorld 2019. A new kit would replace the old one released in 1983 that was one of the most trying kits to build in the Airfix catalogue. Xtradecal has released a brand-new Vulcan Collection sheet to go with the new Airfix kit. There have been a few sets of Vulcan markings on Xtradecal sheets in the past as part of other sets but this is their first dedicated Vulcan sheet. As the title is Pt 1, we are looking forward to more Vulcan decals to come. In the meantime, let's take a look at the contents of this set.

01 Vulcan B.2, XH562 with No. IX Squadron when seen at Masirah Air Base at Oman in 1972. The camouflage scheme is a pattern of Dark Green and Medium Sea Grey on the upper surfaces with gloss White undersides. No. IX squadron's bat badge appears on the tail fin and the nose roundels have been zapped with the RNZAF kiwi badge.

02 Vulcan B.2, XM572, with No. 101 Squadron at RAF Waddington in 1975. The scheme is the usual pattern of Medium Sea Grey and Dark Green on the upper surfaces with Light Aircraft Grey undersides. The decal instructions talk of gloss White undersides but the illustrations show Light Aircraft Grey undersides. A search for XM572 photos shows all sorts of colour combinations at various times. This Vulcan can be seen at the aircraft museum at East Midlands Airport.

03 Vulcan B.2, ZJ781 with No. 12 Squadron at RAF Coningsby in 1963. The scheme is overall gloss Anti-Flash White.

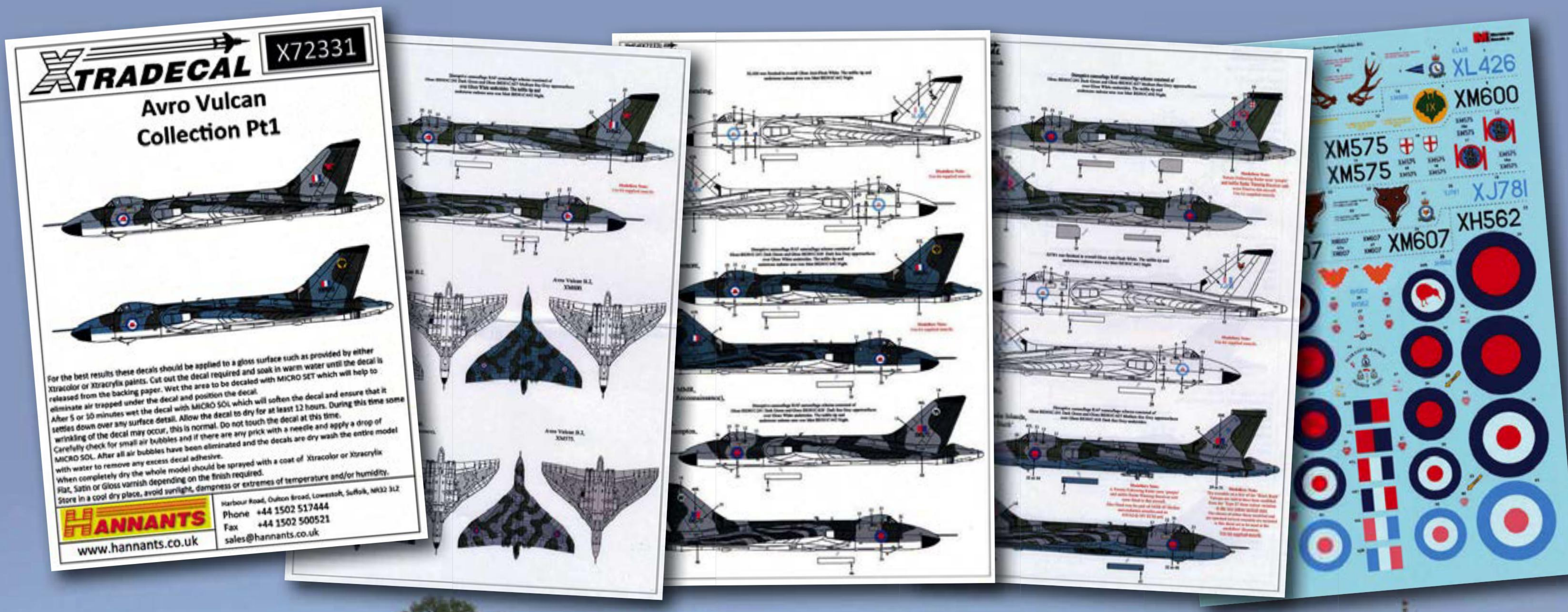
04 Vulcan B.2 (MMR), XM607 when operating with 'Operation Black Buck' 30th April to 1 May 1982, the attack on the Falklands Islands. The upper surfaces retained the standard disruptive pattern of Dark Green and Medium Sea Grey with Dark Sea Grey undersides.

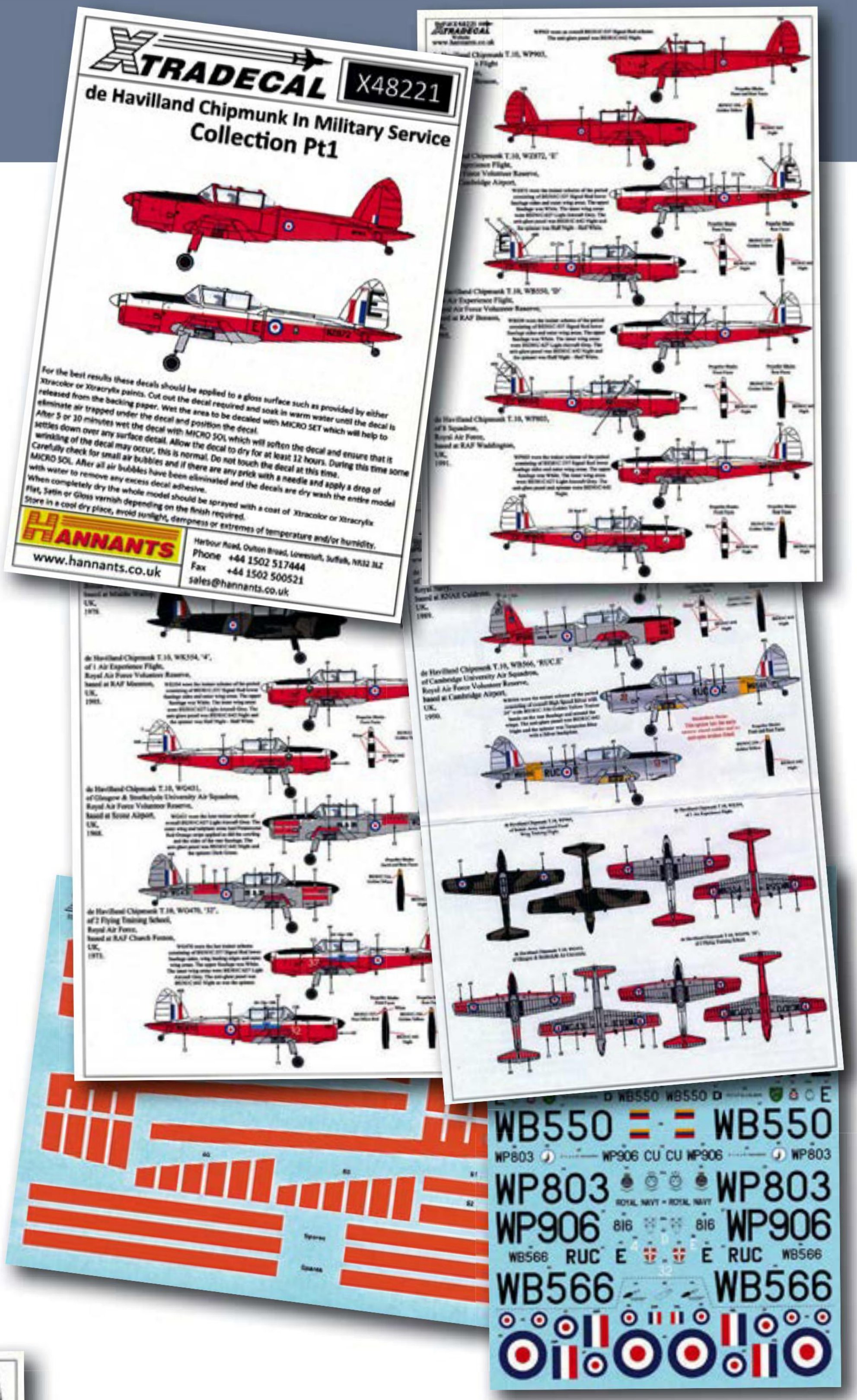
05 Vulcan B.2, XL426 with No. 83 Squadron at RAF Scampton in 1961. This another overall Anti-Flash White Vulcan.

06 Vulcan B.2, XM600 with No. IX Squadron at RAF Cottesmore in 1966. The scheme is a pattern of Dark Green and Dark Sea Grey on the upper surface with gloss White undersides.

07 Vulcan B.2 MMR (Maritime Radar Reconnaissance), XM570 with No. 27 Squadron at RAF Scampton in 1973. The scheme is a pattern of Dark Green and Dark Sea Grey on the upper surfaces with gloss White undersides.

Thanks to Hannants of Lowestoft for supplying their latest Xtradecal sheet for review. See their website: hannants.co.uk for details and ordering. Note that the price of their standard sets is now £8.99.

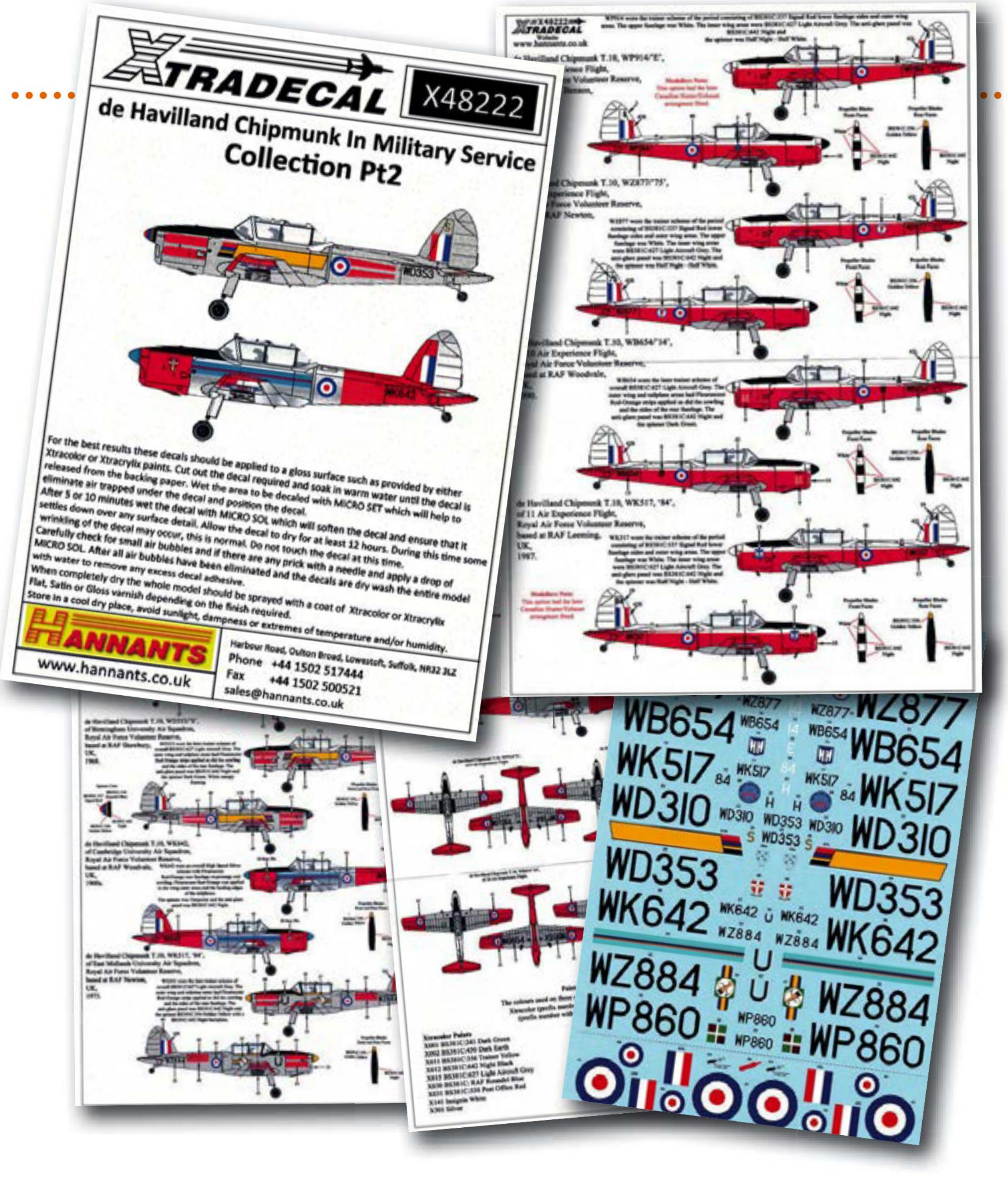




DE HAVILLAND CHIPMUNK IN MILITARY SERVICE COLLECTION PT.1 (SHEET NO. X48221)

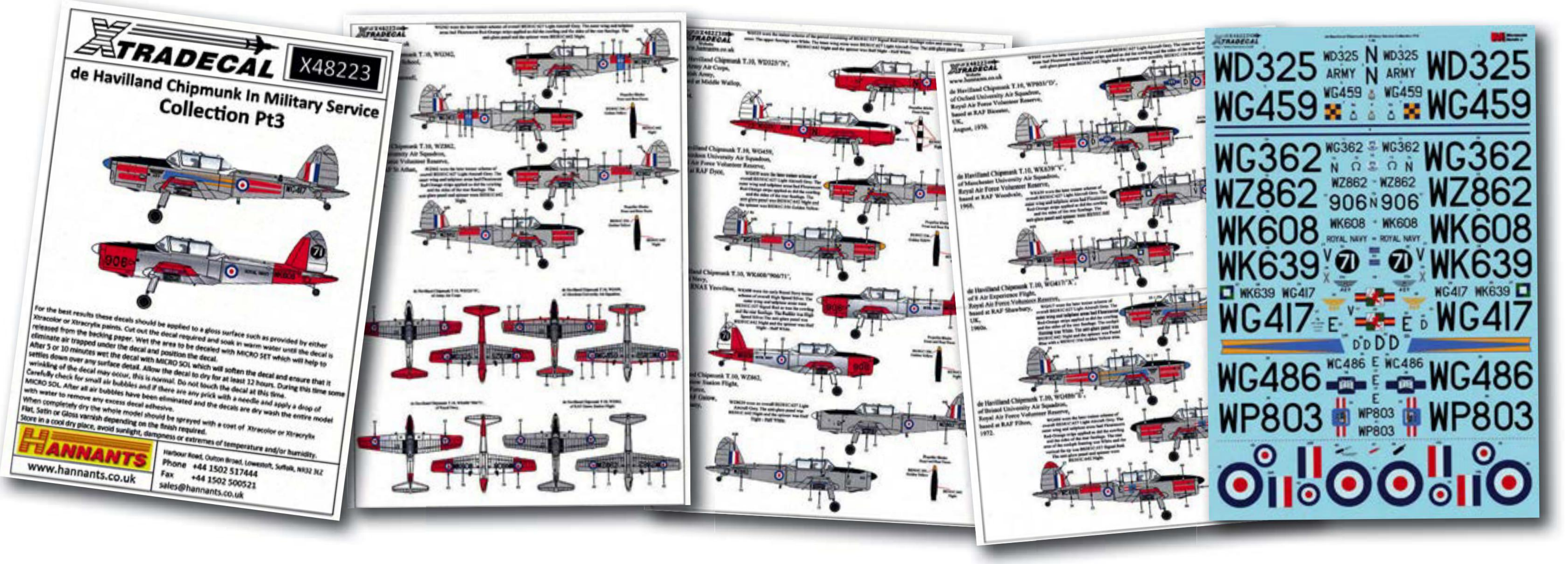
All 10 Chipmunks on this sheet are the T.10 version. The main sheet is packed with individual 'Chippy' codes, etc. There are roundels and fin flashes and a smaller sheet in all four sets provides the Day-glo stripes needed on some of the options. The majority of the Chipmunks are painted in the standard trainer scheme of White fuselage top, Signal Red fuselage bottom and outer wings and Light Aircraft Grey on the inner two thirds of the wings top and bottom. A Black anti-glare panel was applied to the upper nose and most propellers were banded Black and White on the front and Black on the back. Several will have RAF Station or UAS badges applied. Where there are exceptions, we will describe them.

01 T.10 WP903 with The Queen's Flight at RAF Benson in 1968. The scheme was overall Signal Red.
02 T.10 WZ872 'E' with 5 Air Experience flight at Cambridge Airport in the 1970s. The standard trainer scheme applies.
03 T.10 WB550 'D' with 6 Air Experience Flight at RAF Benson in 1995. The standard trainer scheme applies.
04 T.10 WP803 with No. 8 Squadron at RAF Waddington in 1991. The standard trainer scheme applies with 8 Squadron badges, etc.
05 T.10 WP964 with the Army Fixed Wing Training Flight at Middle Wallop in 1978. A wraparound camouflage pattern of Dark Green and Dark Earth applied to this Chipmunk.
06 T.10 WK554 '4' with 1 Air Experience Flight at RAF Manston in 1995 in the standard trainer scheme.
07 T.10 WG431 with the Glasgow & Strathclyde University Air Squadron at Scone Airport in 1968. An overall Light Aircraft Grey with some of the Day-glo stripes on the fuselage and wings.
08 T.10 WG470 '32' with 2 Flying Training School at RAF Church Fenton in 1973. The standard trainer scheme applies with a Church Fenton banner on the fuselage sides.
09 T.10 WP906 '816' with No. 771 Naval Air Squadron at RNAS Culdrose in 1989. The Light Aircraft Grey Chipmunk had Signal Red outer wings, nose and tail surfaces.
10 T.10 WB566 'RUC-E' with the Cambridge University Air Squadron at Cambridge Airport in 1950. The scheme was overall High Speed Silver with Yellow trainer bands on the wings and around the rear fuselage.



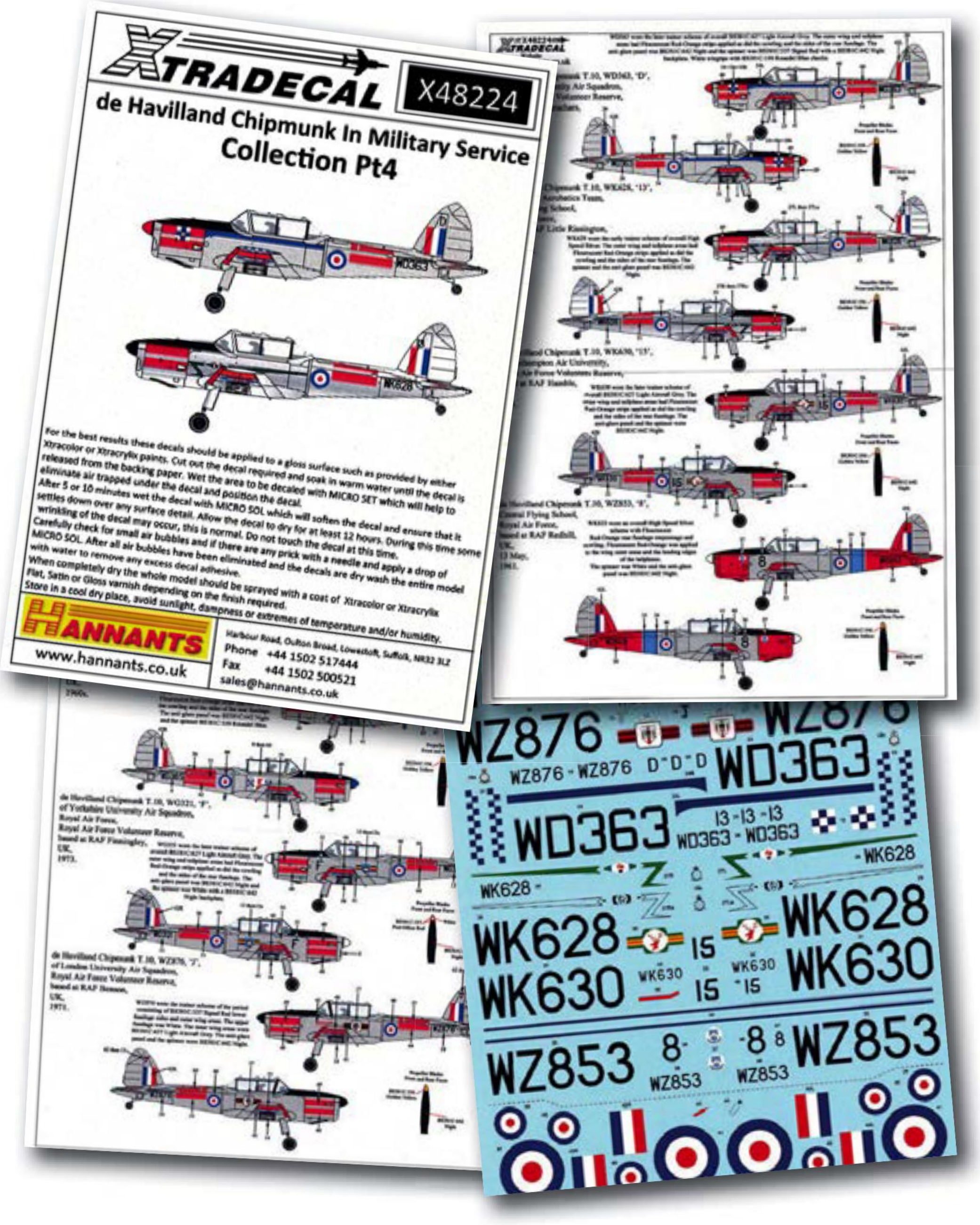
DE HAVILLAND CHIPMUNK IN MILITARY SERVICE COLLECTION PT.2 (SHEET NO. X48222)

01 T.10 WP850 with the Leeds University Air Squadron at RAF Church Fenton in 1969. The scheme is High Speed Silver with Fluorescent Red-Orange nose, rear fuselage and wing tips.
02 T.10 WP914 'E' with 6 Air Experience Flight at RAF Benson in 1979. The standard trainer scheme applies.
03 T.10 WZ877 '75' with 7 Air Experience Flight at RAF Newton in 1995. The standard trainer scheme applies.
04 T.10 WB654 '14' with 10 Air Experience Flight at RAF Woodvale in 1990. The standard trainer scheme applies.
05 T.10 WK517 '84' with 11 Air Experience Flight at RAF Leeming in 1987. The standard trainer scheme applies.
06 T.10 WD310 'H' with the Elementary Flying Training Squadron at RAF Barkstone Heath in 1988. The standard trainer scheme applies.
07 T.10 WD353 'S' with the Birmingham University Air Squadron at RAF Shawbury in 1968. The paintwork is overall Light Aircraft Grey with some of the Day-glo stripes on the fuselage and wings.
08 T.10 WK642 with the Cambridge University Air Squadron at RAF Woodvale in the 1960s. The basic scheme is High Speed Silver with Fluorescent Red-Orange nose, rear fuselage and outer wing panels.
09 T.10 WK517 '84' with the East Midlands University Air Squadron at RAF Newton in 1973. The airframe is painted overall Light Aircraft Grey with Day-glo strips applied.



DE HAVILLAND CHIPMUNK IN MILITARY SERVICE COLLECTION PT.3 (SHEET NO. X48223)

01 T.10 WG362 with the Central Flying School at RAF Cranwell in the 1970s. The scheme was overall Light Aircraft Grey with Day-glo bands and Cranwell's Blue band around the rear fuselage.
02 T.10 WZ862 with the Wales University Air Squadron at RAF St. Athan in September 1972. The scheme is overall Light Aircraft Grey with Day-glo stripes.
03 T.10 WD325 'N' with the Army Air Corps at Middle Wallop in 1994. The standard RAF trainer scheme applies.
04 T.10 WG459 with the Aberdeen University Air Squadron at RAF Dyce in 1969. The scheme is overall Light Aircraft Grey with Day-glo stripes.
05 T.10 WK608 '71/906' with the Royal Navy based at RNAS Yeovilton in the 1960s. The scheme is overall High Speed Silver with Signal Red tail surfaces, nose and outer wing panels.
06 T.10 WZ862 with the RAF Gatow Station Flight at RAF Gatow in West Germany in 1983. The scheme is overall Light Aircraft Grey.
07 T.10 WP803 'D' with the Oxford University Air Squadron at RAF Bicester in August 1970. The scheme is overall Light Aircraft Grey with Day-glo stripes on the fuselage and wings.
08 T.10 WK639 'V' with the Manchester University Air Squadron at RAF Woodvale in 1968. The scheme is overall Light Aircraft Grey with Day-glo stripes on the fuselage and wings.
09 T.10 WG417 'X' with 8 Air Experience Flight at RAF Shawbury in the 1960s. The scheme is overall Light Aircraft Grey with Day-glo stripes on the fuselage and wings.
10 T.10 WG486 'E' with Bristol University Air Squadron at RAF Filton in 1972. The scheme is overall Light Aircraft Grey with Day-glo strips on the fuselage and wings and a Signal Red top of the tail fin.



DE HAVILLAND CHIPMUNK IN MILITARY SERVICE COLLECTION PT.4 (SHEET NO. X48224)

01 T.10 WP970 'J' with 12 Air Experience Flight at RAF Turnhouse in September 1968. The paintwork is High Speed Silver with Day-glo strips on the fuselage and wings.
02 T.10 WD355 with the Liverpool University Air Squadron at RAF Woodvale in the 1960s. The scheme is overall Light Aircraft Grey with the Day-glo strips on the fuselage and wings.
03 T.10 WG321 'F' with the Yorkshire University Air Squadron at RAF Finningley in 1973. The scheme is overall Light Aircraft Grey with Day-glo strips on the fuselage and wings.
04 T.10 WZ876 'J' with the London University Air Squadron at RAF Benson in 1971. The description text says that this Chipmunk is in the standard trainer colours but the illustration suggests an overall Light Aircraft Grey/High Speed Silver scheme with Day-glo stripes?
05 T.10 WD363 'D' Oxford University Air Squadron at RAF Leuchars in September 1968. The scheme is overall Light Aircraft Grey with the Day-glo stripes and a Dark Blue band under the cockpit.
06 T.10 WK628 '13' with the 'Skylarks Aerobatics Team' at RAF Little Rissington in August 1968. The scheme is overall High Speed Silver with the Day-glo stripes and a Green decal stripe on the forward fuselage.
07 T.10 WK630 '15' with the Southampton University Air Squadron at RAF Hamble in 1971. This aircraft is in overall Light Aircraft Grey with the Day-glo stripes on the fuselage and wings.
08 T.10 WZ853 '8' with the Central Flying School at RAF Redhill in May 1961. The finish is overall High Speed Silver with Flourescent Red-Orange on the nose, rear fuselage and outer wing panels and a Medium Blue band around the rear fuselage.

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Airframe & Miniature No.17
for the enthusiast and modeller
The Messerschmitt
Bf 110
A Complete Guide To The Luftwaffe's Famous Zerstörer
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VALIANT WINGS

The Messerschmitt Bf 110

A Complete Guide to the Luftwaffe's Famous Zerstörer – Airframe and Miniature No.17

www.valiant-wings.co.uk

- By Richard A. Franks
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After some recent very welcome revised second editions, the Valiant Wings team is back with a brand-new subject, a book on the Messerschmitt Bf 110. This aircraft is a firm favourite with modellers of WWII Luftwaffe aircraft so we are thinking that this will be a popular addition to the Airframe and Miniature series. It is hardly surprising that this is one of 'chunkiest' volumes in this series. The Bf 110 series was used throughout WWII and in all the places where the Luftwaffe fought. Although intended to cut its teeth in the Spanish Civil War with several other Luftwaffe types, the war ended before the first 110s were ready.

This book follows the familiar format with the opening chapter taking a look at the history of the type from the first proposals in the mid-1930s to the end of development and production at the end of WWII in Europe. As a result of being so widely used, the Bf 110 appeared in many guises and put to many uses. Thirty-two pages describe the development of the Bf 110 in interesting copy and illustrated with many photos. At the end of the chapter there is the sad reality that, given so many were manufactured, only two complete and original airframes remain. What a treat it would be to see a Bf 110 taking part in a Flying Legends air show.

The next four chapters describes the development of the Bf 110, broken down into the main types and the many sub types within each main type. At the end of this process, Bf 110 development concentrated on producing an effective night fighter to counter the relentless attacks by allied bombers on Germany during the closing months of the war.

Always a popular chapter, is that on Camouflage and Markings. As a result of the Bf 110s being used in so many theatres and for so many tasks, many colour schemes were the result. This chapter covers twenty-five pages of words, contemporary photos and excellent colour profile illustrations by

Messerschmitt Bf 110C-2
Underside View
Building a Selection